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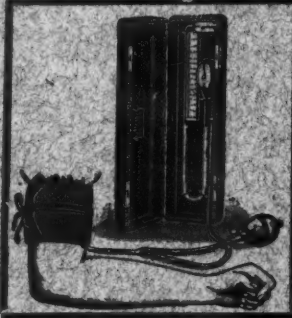

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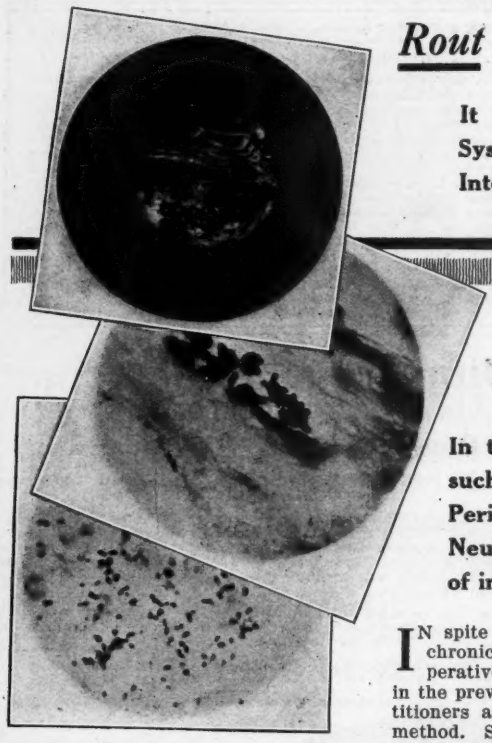

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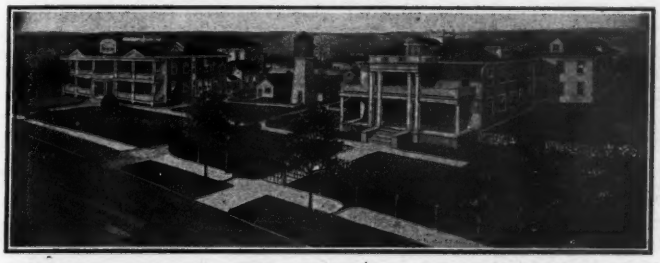

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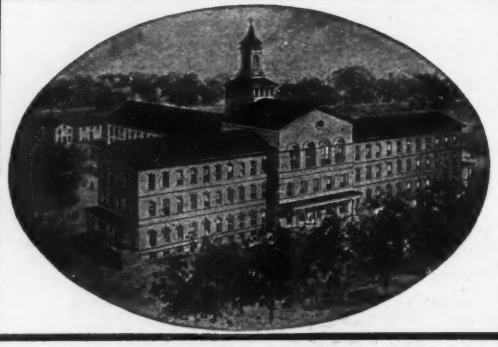

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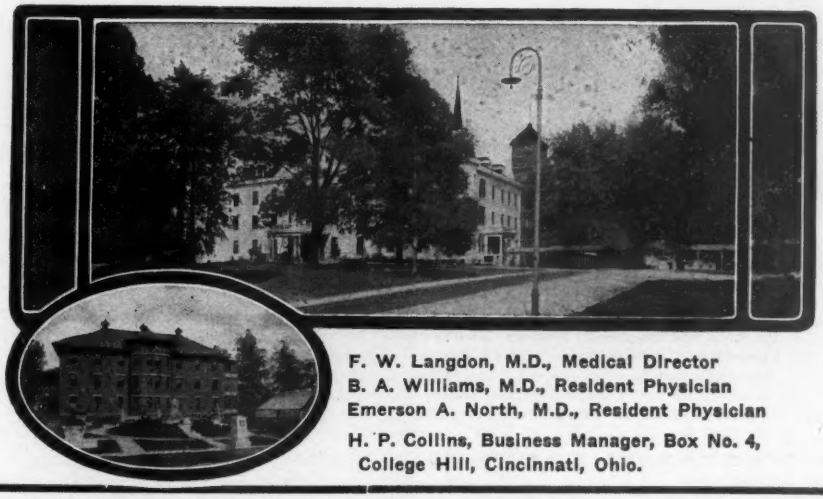

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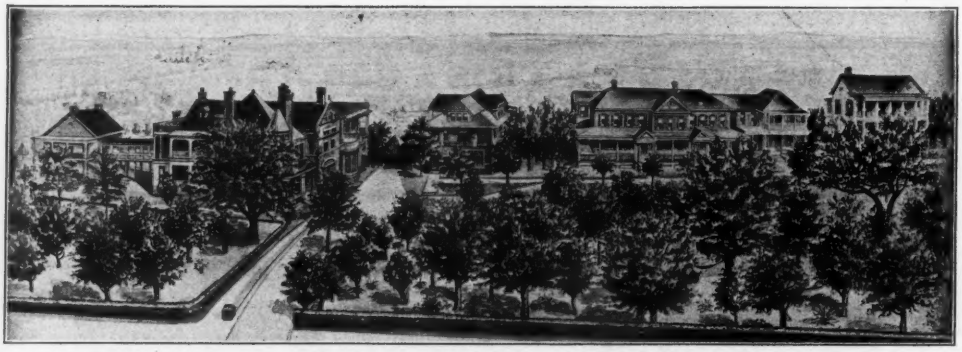

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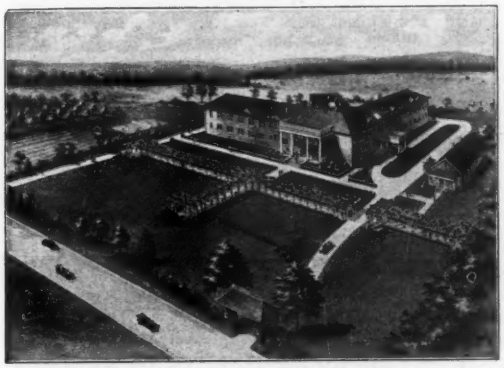

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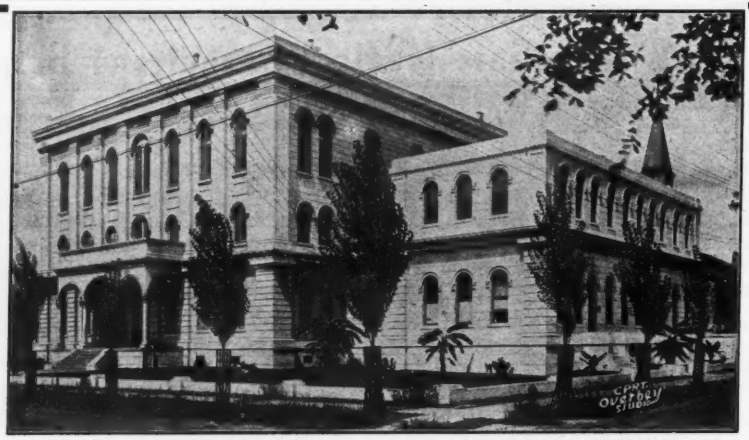

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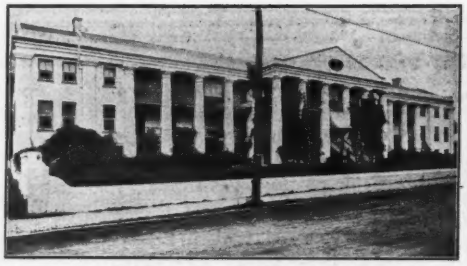

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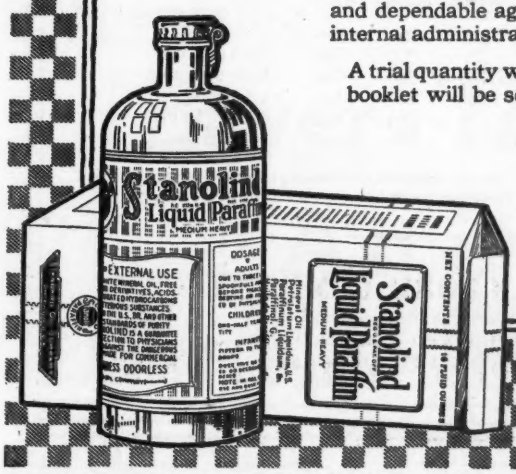

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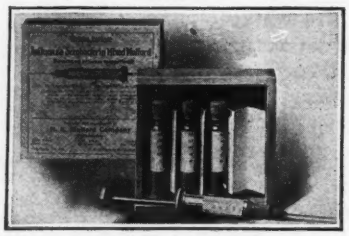

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PUBLISHED MONTHLY AT BIRMINGHAM, ALABAMA

Volume IX | OCTOBER 1, 1916 | Number 10

MEDICINE

(INTERNAL DISEASES, PEDIATRICS, NEUROLOGY, DIAGNOSTIC METHODS, ETC.)

ROENTGEN RAY TREATMENT OF EXOPHTHALMIC GOITER

BY C. AUGUSTUS SIMPSON, M.D.,
Washington, D. C.

One has only to review the enormous literature that deals with this interesting disease to be convinced of how little we know of it and how much there remains to be known before we can intelligently treat all cases of exophthalmic goiter. It is so common to see apparently identical clinical cases of Graves' disease spring from such divers and widely separated points of disturbance that it is impossible to ascribe all cases of the disease as coming from any one, two or three causes.

In recent years disturbances in some of the ductless glands have been accused of being the exciting factor, and it is this interesting topic of which so much is said and written and which we so imperfectly understand that now claims the attention of so many medical men. That this theory does not explain all of the cases of this disease is evident. There are so many cases of exophthalmic goiter in which hard labor and worry, tonsillitis and other acute infections, such as scarlet fever and measles, are the only tangible influences at hand, that it is impossible to ignore their importance. It is evident that a stimulation of the thyroid secretion may be caused by direct toxic and infectious as well as metabolic substances.

Indirect stimulation of the thyroid through one or more of the ductless glands in all cases is easier mentioned than proven. Mann and Drips[1] have only recently disproven the interrelation of the suprarenals and the pancreas and many of the statements concerning the mutual relations of internal secretions are built upon very slender evidence. Disturbances of the internal secretion of the ovaries certainly play a part in some cases of Graves' disease; but whether it is the primary exciting cause or is influenced by an antedating disturbance in the suprarenal, pituitary or thymic gland, one is often unable to state. The same may be said of the influence of a lesion of the thymic, suprarenal and pituitary gland. The location of the primary disturbance may differ in two cases, yet produce clinically identical cases of exophthalmic goiter.

The enlarged and over-active thyroid gland may depend upon a hypertrophic thymus, which in turn may be associated with a hyposecretion of the pituitary gland. The fact remains that even if the primary lesion is not in the hypertrophic thymus Roentgen ray treatment directed toward the enlarged thymus greatly improves the symptoms of exophthalmic goiter. If the pituitary lesion be the root of the evil, why is it that so few of these cases are cured by the administration of the dried pituitary gland?

The presence of an enlarged, hypertrophic and persistent thymus gland has been found in too many cases of exophthalmic goiter to be accounted for by mere coincidence. Not only has it been frequently demonstrated in the living subject, but the great majority of deaths following thyroidectomy have been shown to result from this complication. Such surgeons as Hart[2], Von Haberer[3], Klose[4] and Simmonds[5] of Germany, Rose[6] of Paris, Crotti[7] of Columbus, and Halsted[8] of Baltimore, speak of the dangers and frequency of the

condition in exophthalmic goiter. Simmonds believes it exists in at least 70% of the cases. Capelle, of Bonn, says it is found in 95% of the number of exophthalmic patients dying of some other condition. To prevent serious post-operative symptoms and even death, all advise resection of the thymus at the time the thyroid is removed.

In 1914, the above reports reached this country and I began treating exophthalmic goiter with the Roentgen ray. The year before Crotti had used the ray as a preliminary operative measure, but did not recommend it as a curative agent.

It was the results of Friendlander's[9] work on status lymphaticus that first drew my attention to the effects of the Roentgen ray upon enlarged thymi. He and Rachford were able to cure all of their cases of status lymphaticus by exposing the thymus to the ray and demonstrated its action by publishing photomicrographs of atrophied thymus glands taken from X-rayed rabbits. My work consisted of the application of Friendlander's treatment of status lymphaticus to cases of exophthalmic goiter.

In a preliminary report before the Hippocrates Society (February, 1915), I spoke of two cases of exophthalmic goiter that had been relieved by the Roentgen ray; and the following month I read another article[10] upon the same subject, at the same time showing the gross effects of the ray upon thymus glands taken from treated guinea pigs. At this time I was not aware that the X-ray was being used at Johns Hopkins for the treatment of exophthalmic goiter. However, the following month, April, 1915, Dr. Waters[11] of that institution published his excellent paper upon that subject. Dr. Reede also wrote a splendid article which I had the pleasure of hearing last May.

My attention in these cases has of late been directed toward the effects of the Roentgen ray upon the blood picture as well as upon the thymic tissue. By some (Halsted and Waters, of Johns Hopkins,) it has been claimed that a case presenting a high lymphocyte count is the one that has thymic hyperplasia. In order to watch the effects of the ray upon the cell count of a rabbit whose thymus in one case had been partially and in another entirely destroyed, I selected three two-thirds-grown rabbits of the same litter and size, which I tagged A, B and C. A and B were to be rayed while C, living under the same conditions, was not treated, but kept as a control.

The treatments in these cases were given under the same conditions as to filters, Coolidge tube, distance, and pastiles that I employed for my patients. Rabbit A was rayed every day for eight days, getting in all 24 points Hampson. B was rayed every four days for eight days and received only eight points Hampson. A differential white cell count was done on A every day, on B every fourth day, while C, the control, had a count done on the days treatments were begun and discontinued on A and B.

Before treatments were begun, the white cell counts for A, B and C were as follows:

A—Polys., 62; Monos., 6; Trans., 3; Large Lymph., 8; Small Lymph., 16; Eosin., 5.

B—Polys., 68; Monos., 5; Trans., 3; Large Lymph., 6; Small Lymph., 14; Eosin., 4.

C—Polys., 64; Monos., 5; Trans., 4;; Large Lymph., 6; Small Lymph., 18; Eosin., 5.

End of two days, A's count: Polys., 58; Monos., 10; Trans., 5; Large Lymph., 10; Small Lymph., 12; Eosin., 12.

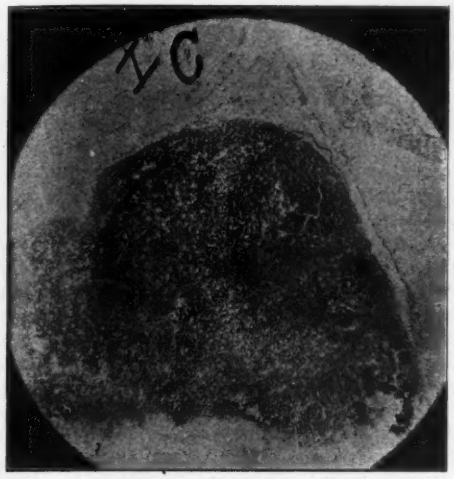
End of four days, A's count: Polys., 61; Monos., 4; Trans., 1; Large Lymph., 15; Small Lymph., 17; Eosin., 3. B's count: Polys., 68; Monos., 7; Trans., 3; Large Lymph., 8; Small Lymph., 18; Eosin., 4; mast cells, 2.

End of six days, A's count: Polys., 55; Monos., 4; Trans., 4; Large Lymph., 10; Small Lymph., 25; Eosin., 1; mast cells, 1.

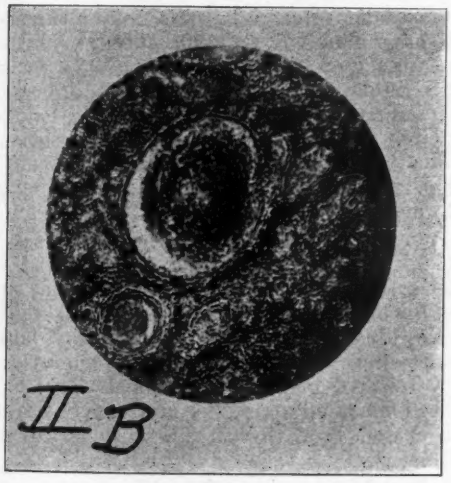
End of eight days, A's count: Polys., 58; Monos., 2; Trans., 1; Large Lymph., 11; Small Lymph., 16; Eosin., 2. B's count: Polys., 65; Monos., 6; Trans., 2; Large Lymph., 6; Small Lymph., 20; Eosin., 1. And C's count was: Polys., 68; Monos., 7; Trans., 3; Large Lymph., 8; Small Lymph., 18; Eosin., 4; mast cells, 2.

In other words, after eight days of successive treatment in which 24 points Hampson of filtered ray were given, causing the destruction of thymic tissue, you will see the white cell count in A was practically the same as before treatments were begun. With B, which had one-third as much ray as A, the count also remained the same as before treatments. With C, which had no treatment, the cell count was the same at the end of eight days as it was at the beginning of the treatments on

A and B. All rabbits had their blood taken and were treated at 2 o'clock in the afternoon of the same day, after which they were given the second feeding of the day. The cell counts were very kindly done by Drs. Hahn and Hunter, of this City.



No. 1—Rabbit C, showing the thymus of a normal untreated rabbit; capsule very thin.



No. 2—Rabbit B, showing great change in the number and size of blood vessels, their intense engorgement with organizing thrombi, and great increase of the trabeculae. This rabbit received 8 points Hampson, filtered ray.

No. 3—Rabbit A, showing complete atrophy and disappearance of thymic tissue, its place being taken by connective tissue. The capsule is very much thickened. The thrombi in the vessels have become organized into connective tissue. In other words, the lymphatic gland seen in Rabbit C has been changed by X-raying into a connective tissue structure. This rabbit had 24 points Hampson, filtered ray.

DIFFERENTIAL COUNTS

White cell counts of ten cases of exophthalmic goiter:

	1	2	3	4	5	6	7	8	9	10
Polys.	55.	69	71	60	55.	70	73	60	65	75
Monos.	6.	2	2	5	4.	2	2	4	2	6
Trans.	4.5	2	1	0	3.	2	0	5	3	17
Large Lymph.	12.	8	7	10	10.5	4	2	8	7	17
Small Lymph.	21.	17	19	25	27.5	22	22	20	22	17
Eosinophiles	1.	2	0	0	.0	0	1	3	1	1
Mast Cells	.5	0	0	0	.0	0	0	0	0	0

Pathological changes in the thymus gland following the exposure of the gland to the Roentgen ray. These changes consist of various degrees of atrophy of thymic tissue, great increase in the number of blood vessels, their intense engorgement with organizing thrombi, thickening of trabeculae, increase of the reticula and other signs of advanced sclerosis.

A review of these figures will show that the raying of the rabbits had no effect whatever, even when the treatments were carried to the point where the thymus was destroyed. The thymus seems to be only one of a number of white cell-forming organs of the body, and it does not seem that its destruction or excision will cause such a tremendous decrease in the

number of white cells as has been stated. Stoerk[12] has shown that the blood picture curve after thymectomy and thymus extract injection shows practically the same change as when Roentgenized. In the work that I have been doing with cases of exophthalmic goiter the above blood findings seem to be substantiated. I am unable to see any connection between the white cell count and the clinical symptoms or the results.

I can say definitely that very few of my cases of Graves' disease, not over 10%, have shown a high lymphocyte count,—certainly not half so many as the number of enlarged thymi that have been said to complicate exophthalmic goiter. These findings do not correspond with Stohr and Weidenreich's opinions that the cortex of the thymus is the chief source of the small mononuclear leucocyte. Kocher's blood picture, namely a leucopenia and eosinophilia with great relative and absolute increase in the mononuclear elements, has rarely been seen in my series of cases. As I have said, the blood count in my hands has been of little value, and the same may be said of the x-ray pictures and fluoroscopic examinations.

I find that if we treat only those enlarged thymi that can be demonstrated by the X-ray picture and the fluoroscopic examination, we will eliminate many cases which will greatly improve under Roentgen treatment. I do not mean to say that this can not be done, but only wish to give my experience with six cases. For this reason I have given up this as a routine method of diagnosis as being of very little use and at times even misleading. In one such case with the three above-mentioned examinations negative, I treated the thyroid a number of times with no result. I then began raying the thymus alone, after which I was able to get a very good result, which began after the second treatment.

The technique that I employ was published in the *Medical Record* September 4, 1915; but I have since that time increased my dose of ray to 5 instead of 4 points Hampson. Roughly, my present technique consists of giving 5 points H. of ray, filtered through 1 mm. of aluminium, over the thyroid and thymus regions every two weeks, the skin being protected from secondary rays by several layers of chamois skin, the pastile being placed in a black envelope and secured to the rayed surface. The Coolidge tube is used, the anode of which is 8½ inches from the skin. None of my cases have shown any more skin reaction than a temporary redness which comes on the day following treatment and which subsides ten days after the previous treatment.

In the twenty-eight cases of Graves' disease that I have treated, five, or less than 20%, have failed to show any real improvement. One of these cases was found to have pulmonary tuberculosis with an evening rise in temperature and pulse. As to be expected, I failed to lower the pulse in this case. One of these failures was given corpus luteum, which lowered the pulse from 138 to 115 in one week. At this time she had a fright and the following morning the pulse was 135, where it has remained in spite of ovarian extract, ice bags applied to the tumor and X-ray. Another of these failures was rather an unusual case. She was a poor sleeper, had prominent eyes, was very thin and anemic and had a very large and disfiguring goiter. Her most pronounced symptoms were weakness and a choking sensation. Her pulse was very good and I never found it over 90. Treatment had no effect on this case, and I have never been able to make myself believe this was an uncomplicated case of exophthalmic goiter or hyperthyroidism. The patient was 70 years old and I think that most of her choking symptoms could be attributed to pressure.

In the twenty-three favorable cases I think the results compare very well with those obtained by surgery when one studies the material dealt with. Fully one-third of the twenty-three favorable cases had been advised against operations by medical men and surgeons. Two had been operated upon once, and one had been operated upon three times with no favorable result.

Dowd[13] says that 70% of his toxic cases show great improvement, Kuttner[14] 60%, Garre[15] 80%, Mayo[16] 70%, and Rogers[17] 75%. I find that when the percentages are much higher than the above figures,

the cases have been selected and do not deal with what Dowd speaks of as toxic cases. In Garre's results, 20% have persistent exophthalmos.

The best results in my cases were seen in improvement in pulse, weight, tremor, sleeplessness, general nervousness, and the fact that they were able to do labor that was impossible before the treatments were instituted. The exophthalmos often persisted in spite of the treatments. The tumor was the next most difficult symptom to remove. Some of the results were truly remarkable. In two cases the raying changed what appeared to be two hopeless cases of exophthalmic goiter complicated with mania into perfectly rational and intelligent patients.

One of these cases had been operated upon three times by leading surgeons of this country with no improvement in the exophthalmos,mental symptoms or tumor. This case also had Roentgen ray exposures over the thyroid until she suffered from a second degree burn. Another case with a daily fever of 102° and a pulse of 125 was relieved after the second treatment. I saw this patient on the 21st of February, one month after she was treated, and her pulse and temperature were normal and she has gained 35 pounds in weight without any rest treatment of any kind.

In simple goiter the ray has not been of the slightest use in my hands. Surgery is no doubt the best method of treatment for these cases. The pathology, as Dr. Hunter has shown, bears out the fact that squamous epithelium of the follicles occurs in simple goiter and explains why these cases are easier to influence than the exophthalmic goiter whose follicles are lined with columnal, more highly developed and radiosensitive, epithelium.

CONCLUSIONS

1. That X-raying the thyroid gland alone will sometimes relieve the symptoms of Graves' disease.

2. That the blood count, fluoroscopic, and X-ray picture examinations are often misleading and should not have too much effect on prognosticating the favorable and unfavorable cases.

3. That a large percentage of cases of exophthalmic goiter are associated with enlarged thymi, which many surgeons, to avoid dangerous post-operative symptoms and even death, advise resecting at the same time the thyroid is removed. This must greatly prolong and complicate the difficult operation of thyroidectomy in patients whom we have always regarded as bad operative risks.

4. That the Roentgen ray will quickly and painlessly atrophy the thymus gland, and for this reason should be the method of choice in all cases of exophthalmic goiter where enlarged thymi are suspected.

1. Jour. A. M. A., Jan. 20, 1916, p. 356.
2. Arch. f. klin. Chirurgie, Berlin, January 29, 1914.
3. Annual Meeting, German Surgical Society, Berlin, March 15, 1914.
4. Therapeutische Monatsh., Berlin, January 29, 1914.
5. Zentralblatt f. Chirurgie, Leipsic, March 21, 1914.
6. Semaine Medicale, Paris, January 21, 1914.
7. Jour. A. M. A., January 11, 1913.
8. Bull. Johns Hopkins Hospital, XXVI, 55, 1915.
9. Arch. of Pediatrics, 1911, p. 810.
10. Medical Record, September 4, 1915.
11. Jour. A. M. A., April 24, 1915.
12. Gesellsch. f. klin. Med. u. Kinder., in Wien, XV., 23 1913.
13. Jour. A. M. A., Feb. 12, 1916.
14. Verhandl. d. deutsch. Gesellsch. f. Chir., 1911.
15. Verhandl. d. deutsch. Gesellsch. f. Chir., 1911.
16. Medical Record, December 31, 1910.
17. New York Surgical Society, January 15, 1915.

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SCURVY VS. RHEUMATISM*

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It has been very appropriately stated that, "Advertisements of numerous proprietary foods, together with an abundance of medical literature on scientific feeding of infants, have led both mothers and physicians into a false sense of security in the practice of artificial feeding. The loss of infant life is so spread out over the entire country that the individual

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physician does not appreciate his own responsibility." The healthy outward appearance of the proprietary food baby may satisfy the vanity of most physicians, but the results of this food indulgence can not be reckoned with until the baby has passed through that period of its life where nutritional disturbances are most likely to appear, and where the real test of the baby's resistance is observed. If the bad effects of poor feeding were observed at once, we should not have very much of it.

No one will doubt the advantages of high sugar diets — and proprietary foods are nothing more than high sugar diets — when it becomes necessary to tide a patient over certain crises, nor am I here to offer any protest against the use of proprietary foods in such cases. But the life of the bottle-fed infant—the nursing period of any infant — is not made up of crises. And while, as I said, there may be times when the fat and protein of a food should be temporarily discontinued, and it then becomes necessary to use some form of food to allow for body expenditure, proprietary foods often subserve a very useful purpose. The persistent indulgence in such a practice, however,—the continuation of proprietary foods, — is certainly to be condemned.

It is my purpose this evening to discuss briefly one of the two principal nutritional diseases that result from improper feeding, scurvy, and to differentiate it from the most frequent condition with which it is usually confounded, rheumatism.

To begin with, what is scurvy? A nutritional disease due to some prolonged error in diet. Whatever else may be included as a causative factor, this one thing stands out clearly and definitely against all arguments.

The disease is characterized by pain and swelling of limbs, spongy bleeding gums, certain hemorrhagic manifestations, marked anemia, and absence of fever. It begins insidiously and, because of its often mild character and rapid subsidence under change of diet, is often overlooked.

With the decrease in frequency of scurvy in adults there is on the other hand still a wholesome percentage occurring among infants. Reason for the former state of affairs may be attributed first to our better understanding of the disease, and secondly, to the general improvement of food diets which incidentally constitute an anti-scorbutic treatment. The continuation of scurvy among infants may be attributed largely to the persistent usage of boiled, sterilized or proprietary foods.

You may well ask why we do not find scurvy more often among the poorer classes and tenement districts where, as is well known, proprietary foods, particularly condensed milk, are generally used. For the reason that while this class of patients is recklessly fed so far as scientific methods are concerned, it is also given "tastes of this bit of fruit, or of potato, or other table food." The early indulgence of this anti-scorbutic diet prevents the development of scurvy that might have occurred otherwise. As Dr. LaFetra puts it, "One might say that the hygiene of the proprietary food, so far as sterilized and great care against germs are concerned, is altogether too good."

The first symptom of scurvy noted is usually pain and tenderness of the lower extremities. This symptom is due to subperiosteal hemorrhage, and may become so extensive as to cause separation of the epiphyses from the shaft of the long bones. Or, it may assume the form of large bluish swelling, which has more than once been taken for malignant disease, especially when associated with marked cachexia and anemia. Still, of London, asserts that the disability and swelling of the femur or tibia have at times led surgeons to explore the bone for deep abscesses. Hemorrhages of the visceral organs may also be expected. It is reported that a certain distinguished surgeon of New York City was called one night by two physicians to operate for intussusception upon a child just under eight months of age. The child was apparently in a condition of shock and was having crampy pains and bloody mucous stools. An exploratory operation seemed advisable, but during its course the infant went into collapse. While efforts at artificial respiration were being made, the gums were observed to be spongy and bleeding. The baby died. Further examination by daylight and close questioning into the previous feeding history proved without doubt that the child's bloody defecations were of scorbutic ori-

gin, no intussusception having been found upon operation.

Coincident with the pain of the extremities may be seen the peculiar characteristics in the mouth,—swelling, discoloration, spongy gums, bleeding easily on irritation and often preventing the patient from taking its food. If untreated the case rapidly assumes a more severe form. The pain becomes exquisite, hemorrhagic conditions appear on the skin surface in the form of purpuric spots. Joints may become involved, orbital sockets may be infiltrated, and marked anemia be noted. "The baby is," in the words of Dr. Holt, "truly a pitiable object."

But where does rheumatism play its part?

The reasons I have for bringing rheumatism into the discussion are: First, the great frequency with which the condition is confounded with scurvy; secondly, the possible grounds for the mistaken diagnosis; and thirdly, the desire to emphasize the main differential points.

Now many of you may think that a mistake in the differential diagnosis of two so entirely different diseases is absurd; but when I tell you that fully 75% of those cases of scurvy brought to the hospital are there because of their failure to respond to anti-rheumatic treatment, I think that you will agree with me that the question is an important one, and that there is still considerable room for improvement in our knowledge of the conditions.

With the increasing knowledge of rheumatism comes the establishment of this fact, that of all diseases to which children are liable none is so varied in its manifestations as rheumatism.

The slight stiffness of limbs with pain on motion, especially during the early morning hours, the occasional stiff neck, the persistent muscular pains—perhaps in the hips with slight limping,—certain marked habit spasms, and more or less frequent attacks of sore throat, may be waved aside by many physicians with the consoling diagnosis of "growing pains," nervousness or tonsillitis, but the subsequent development of more serious conditions, such as cardiac disease, should force the conclusion that we have been dealing with the true rheumatic complex. Moreover, we are to realize with the facts at hand that chorea, pericarditis, and endocarditis are closely associated with rheumatism and may, in fact, be the first symptoms noted of the existence of the disease. Rheumatism, as estimated by Sir Dyce Duckworth, is the cause of 75% of choreas; and if the rheumatc manifestations had been recognized during early childhood, with proper treatment instituted then, there would, perhaps, be no chorea to treat later on.

From a differential point of view, the age incidence of scurvy and rheumatism, respectively, should make one cautious. Since scurvy is considered a nutritional disease depending upon some prolonged error in diet, it naturally follows that the age incidence, or the time of the first manifestations of the disease, must be several months after birth. According to the splendid report of the American Pediatric Society, the age incidence is placed between seven and fourteen months.

In spite of the peculiar characteristics of rheumatism, which might bear some similarity to scurvy, in spite of its varied manifestations, rheumatism is not a disease of infancy, or that period when nutritional disturbances are observed. It is a pretty safe rule that a diagnosis of rheumatism in a child under two years is a mistake. Dr. Still records not having seen a single case under two years among 1,027 children, all with apparently definite evidences of rheumatism. That a few authentic cases occurring under one year have been reported bids us keep on the lookout, but they are so few that our diagnosis must be carefully guarded.

Again, a case of scurvy may have certain joint signs which appear as a typical joint of rheumatism, but on closer observation it will be noted that the lesions present are not in the joint at all, a fact which should at once put the observer on his guard.

No wonder, then, that a physician who is not familiar with the various manifestations of rheumatism in childhood, and who regards arthritis as a necessary symptom for his diagnosis, will not only overlook the majority of his cases of rheumatism, but is very likely to err in favor of scurvy.

Unless, therefore, physicians familiarize

themselves more with the characteristics of each disease, we are going to have the two conditions confused. Moreover, so long as we continue to adopt the suggestions of the proprietary food manufacturer, we are going to continue to have scurvy.

As for the prognosis and treatment, I shall have to omit the discussion on rheumatism, but as for scurvy only a word need be said. The prognosis depends upon the early recognition of the disease, severity of the symptoms, and the complications. Death in untreated cases results usually from hemorrhage, exhaustion and broncho-pneumonia. In recognized cases, the treatment is highly satisfactory, and none is more easily instituted. It may be covered briefly by the rules: discontinue all previous feedings, especially if they have been patented, boiled or sterilized; give fresh milk, fruit juices and, if the digestion will stand it, puree of potato or green vegetables. In all suspected cases the effect of treatment — the therapeutic test—is of the greatest value, inasmuch as the results show in forty-eight hours, and no harm as a rule can be done by waiting so long.

In conclusion, if in doubt when the baby is unduly irritable on being handled, and shows, perhaps, local manifestations of joint pains, preclude first the idea of rheumatism, change the diet to raw milk, and give orange juice.

Cusach's Building.

DISCUSSION.

Dr. L. R. Debuys, New Orleans, La.—At this time, when our knowledge has increased so materially, there should be no reason for confusing these two diseases. A paper like this occasionally, however, serves as a reminder that these two diseases should not be confused one with the other.

I want to add that if a routine examination of the patient's urine is made, including a microscopic examination for blood, there will frequently be found evidences of scurvy earlier.

Another point we should bear in mind is that whenever babies are put on artificial foods a teaspoonful or two of orange juice should be included in the daily diet so as to prevent the development of scurvy.

Dr. Frank P. Gegenbach, Denver, Colo.—I recently had occasion to look up the subject of scurvy and came across an article by Rachford; and in that article he gives a report of the American Pediatric Society as to the nature of the food upon which these various cases of scurvy were fed. As I recall there were 214 cases, and of this number 114 were fed upon proprietary foods, exclusive of condensed milk. There were 60 cases fed upon condensed milk, and 20 cases upon Pasteurized milk; 5 cases upon raw cows' milk and 12 cases upon breast milk.

That leads me to mention a point I would like to have brought out in the discussion of the paper upon weaning, and that is I take a rather middle ground between what Dr. DeBuys and Dr. Snyder advocated. Dr. Snyder rather held that if the supply of breast milk is sufficient, you can keep the baby on it exclusively for a whole year, while Dr. DeBuys favors weaning at nine months. I believe in early feeding.

If the child can not have good breast milk I give it bottle food, and at seven or eight months I give other foods, starting with orange and prune juice along the line Dr. DeBuys suggested. Then I start with cereals, broths, beef juice, and so on. In other words, cases of scurvy under breast milk are due to the fact that they have been kept upon breast milk too long rather than that the breast milk during the ordinary nursing time was deficient in some food element that inclines to scurvy.

There are practitioners who believe that some change occurs in the albumin and salts in the foods as a result of the boiling and that that change is the real cause of scurvy. We are not absolutely sure what scurvy is, but we know it as a symptom complex, and that it most frequently occurs under the use of proprietary foods, and, in the second place, under the use of cows' milk that has been sterilized. In Germany, where they boil practically all milk, they claim it only occurs in cases where cows' milk is boiled twice. It occurs where the quality of the milk is so poor that dairymen boil the milk first, and the people as a routine measure boil it as soon as it gets into the house.

AUTOGENOUS BACTERIAL VACCINES IN THE TREATMENT OF BRONCHITIS*

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and
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It can hardly be said that material progress has been made in the use of bacterial vaccines since their introduction by Wright.

It was hoped that we would have a tabulated report from the Inoculation Department of the St. Mary's Hospital; but

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unfortunately or fortunately, as the case may be, Wright is not a believer in statistics. Statistics compiled today are generally undertaken to substantiate or disprove some previously formed conclusion; and any deductions drawn from them are naturally exaggerated on one side or the other, or may be entirely erroneous. The experiences of different men who have received variable degrees of training and who are working under different environments are so much at random that nothing approaching any definite conclusions can be drawn from their reports.

Dr. Hester Mackinzit[1] says that he has "yet to see a case recover under vaccine treatment that would not have recovered under ordinary treatment." Dr. Batty Shaw[1] is of the same opinion.

Dr. John D. Allen[2] reports "48 cases of acute and chronic cystitis and pyelitis with 41 complete cures," a modest 85%. He also reports 75 cases of chronic gonorrhea treated with vaccines with marked improvement and complete recovery in all, a modest 100%.

When aseptic surgery was in its infancy the literature was full of conflicting reports due to conclusions formed by insufficiently taught and trained workers. The Roentgenologist is suffering from the same trouble and from lack of a standard for equipment today. But with the immunologist a still greater variance can be found in the matter of dosage.

Dr. W. M. Crafton[1] gives as high as 30,000 million staphylococci as a maximum dose and 10,000 million streptococci as a maximum dose.

Dr. Max L. Mendel[3] recommends only 100 million staphylococci as the maximum dose and from 25 to 100 million streptococci as the maximum dose.

It is not surprising, then, that the internist, when he undertakes therapeutic immunization, finds himself lost in the literature of medical journals and accepts the dose and indications as printed on the labels by the different pharmaceutical houses, which no doubt approach a greater degree of accuracy than he could get by indiscriminate reading of the literature.

The methods of growing and standardizing vaccines have received more attention from laboratory workers than the question of dosage or therapeutic results. These standards are fairly well fixed; and it is a question of individual honesty whether an autogenous vaccine is prepared with a view of giving the greatest immunizing properties with the least disagreeable results, or whether it is thrown together with the view of turning it out in the shortest possible time and with the smallest expenditure of energy as the aim to be obtained.

The work of Vaughan and others has shown that much of the intense local and general reaction accompanying the administration of vaccines is due to protein poisons carried over from the culture medium, which has little to do with immunizing the subject against the bacteria present. We have, therefore, adopted the method advised by Stone[4] and others of getting rid of excessive amounts of protein.

The method of standardization first introduced by Wright is largely used. This is subject to 20 to 30% error when used by an experienced worker, and the chance of error is much greater in the hands of a novice. The hemocytometer chamber described by Glynn,[5] Mallory and Wright[6] and others is to be preferred; and while this calls for an extra expenditure in equipment, we believe that this expenditure is justified.

While it is generally conceded that the administration of autogenous bacterial vaccines in simple bronchial catarrh is justifiable, our experience and the experience of a number of other workers leads us to believe that it is also beneficial in pulmonary tuberculosis, where the condition is not acute and where symptoms due to a secondary infection are pronounced. In a series of articles appearing in the *Journal of the American Medical Association* on "Preventive Medicine"[7] the assertion is made that "vaccines will often aid in the cure of chronic tuberculosis."

Dr. H. S. Habershon[8] states that "when the tuberculous infection in the lungs is not active and the secondary symptoms of bronchial catarrh pronounced," he has "obtained excellent results with autogenous vaccines." Dr. O. Frankfurter[9] reports 50 cases in which the secondary infection in pulmonary tuberculosis was

treated with vaccines, and states that "25 cases, or 50%, were cured of their cough and expectoration." W. F. Wittich[10] reports 196 cases treated with favorable results.

None of these authors contend, of course, that vaccines are curative of the tuberculous infection, but that they are efficient means of combating two of our most distressing complications — cough and secondary infection.

Our own experience is based upon the preparation of 300 autogenous vaccines for pulmonary infections. Of these, practically all were administered in part or entirely by other physicians under our direction. Of these, we have complete reports on 30. Twenty-two were reported cured after one year. Eight were not benefited or suffered relapse. Of the 40 cases with partial report, 36 reported an improved condition and 4 reported no change.

The ultimate results in the cases complicated by pulmonary tuberculosis will have to be reported by those having them under observation. But that a stopping or diminution in the amount of the cough and expectoration and the controlling of the temperature, if only for a few months, would be a material factor in the ultimate cure of the patient, can not be denied. We must not lose sight of the fact that an active immunity may last only for a few months, and that during this time the general health of the patient must be brought to a high standard through rest, dietetic and hygienic means or a relapse will be most probable.

It has not been our custom to exclude from a vaccine any organism that will grow on blood agar at 37.5° C., but rather to prevent an overgrowth of organisms whose pathogenicity is doubtful.

Entirely too much stress has been placed upon determining exactly whether or not we have secured the organism producing the disease. This is a matter of impossibility when preparing vaccines from sputum. The question of doing an agglutination test is of doubtful efficiency; for we do not know in what strength the organism in question produces agglutinin or the amount of normal agglutinin in the patient's serum. The matter of securing a negative and positive control would also exclude this test as well as the complement-fixation test and others.

Dr. Henry Hanson[11] in a paper before this Association last year cautions us to be sure that we always have the exact organisms. He says: "As important as all the foregoing, is the matter of being absolutely certain that you have the organism that is the cause of the disease." Yet he does not tell us how to do this. Such a procedure, if not impossible, is certainly impractical.

Dr. E. D. Holland, in discussing Dr. Hanson's paper, says: "To have a real autogenous vaccine, it should contain the bacteria present in the same ratio as was found by an actual count from a smear taken from the secretion." This does not necessarily hold good that the number of bacteria of each variety required to produce immunity is somewhat constant. Counts made from different smears taken at the same time and on different days show a wide difference in number. Hence, a vaccine standardized on this principle would be open to grave errors.

It is important that sputum from which a vaccine is to be made should be coughed from the lungs, that the mouth should be thoroughly cleansed beforehand (plenty of water and a brush is all that is needed; antiseptics should not be used) and that the sputum should be expectorated at once. The lump or lumps from which the culture is to be made should be washed with sterile distilled water and then broken up with glass beads or "squeegide." If this is done the bacterial flora in culture is never very heavy, and there is no scientific reason for excluding any of them from the vaccine unless we are sure that it is a contamination.

We feel sure that many times bacteria which are ordinarily non-pathogenic assume a degree of pathogenicity in the lungs.

While blood agar is used for platings, we prefer, when possible, to grow the bacteria from which the vaccine is made on good stiff agar or neutral bouillon.

Sterilization is done at 56° C. for one hour, and then suspended in 0.25% phenol in 0.85% salt solution and cultured, after which it is placed in 1 c. c. ampules and sealed.

Where the vaccine is kept in the Laboratory and we personally supervise its administration, only the first dose is heated. We have found that 0.25%, or at most 0.35%, phenol destroys the vitality of the organism in a few days and that the vaccine is more potent. Where the vaccines can be cultured from time to time, we believe that this is safe, but have not considered it safe to send them out for general use.

An attempt is made to standardize so that the total number of bacteria will be 1,000 millions per c. c. This facilitates ease in administering the dose, as each 0.1 c. c. then represents 100 million bacteria.

The first dose is generally 0.2 or 0.3 c. c. (0.1 c. c. is, roughly speaking, two minims). This dose may be repeated in 5 to 10 days, increasing 0.1 to 0.2 c. c. each dose, depending upon the reaction secured from the previous dose. Reactions are of two kinds, local and general. The local reaction consists of a redness and swelling at the point of inoculation, which should be about 2 or 2½ inches in diameter and should last 2 or 3 days, with some tenderness to touch. The general reaction is from nothing to a feeling of malaise with an increased cough and expectoration and a rise of temperature. If temperature is produced or if the local reaction is greater than 2½ inches, the dose is excessive and the next dose should not be increased, but reduced if thought advisable. Many patients will complain of a feeling of malaise and increased expectoration if advised that these symptoms may occur.

As the bacteria tend to settle to the bottom and sides of the container, it is well that the ampule be thoroughly shaken before being opened.

Any convenient location may be selected for giving the inoculation; but as vaccines produce immunity more readily when injected into the intracellular tissue, care should be taken not to inject it into the muscle or too near the skin.

In conclusion, we wish to say that an autogenous bacterial vaccine insures a correct bacteriological diagnosis, which is the one essential in all vaccine therapy.

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BORDER-LINE PROBLEMS IN DIGESTIVE PATHOLOGY INVOLVING BOTH MEDICAL AND SURGICAL TREATMENT

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In no line of pathological physiology does the solution of the problems involved draw so closely together the physician and the surgeon as in the case of those of the digestive tract; in no line is the welfare of the patient so dependent upon the delicate balancing of the arguments in favor of the medical as opposed to the surgical treatment, and vice versa; and in no series of cases is correct diagnosis so difficult and interpretation of signs and symptoms so susceptible of such variations according to the method of approach. In fact, from esophagus to rectum we meet at almost every level many complicated borderline problems.

For this reason it has seemed to us that it might be of interest to discuss certain of these problems, some of major and others of minor interest based entirely upon our clinical experiences of the past few years,—not large enough, perhaps, to warrant our formulating iron-bound rules, but of sufficient extent to suggest the

drawing of certain conclusions, and at least to stimulate discussion on this subject of real interest. It has seemed to us as most advisable to discuss in turn the medical-surgical aspects of these conditions, taking up in order esophageal diseases, gastric cancer, pyloric-duodenal ulcer, gall-bladder disease, visceroptosis, chronic appendicitis, various types of adhesions, post-operative and otherwise, certain types of intractable diarrhea, and fecal stasis with symptoms of auto-intoxication.

We realize, of course, that in even assuming that there is a medical aspect to certain of these cases we may be flying against popular prejudice, for no one can fail to realize that this is a surgical age in which we live, and many of the laity would far prefer to risk death surgically than to live, albeit a bit impaired, under a beneficent medical regime.

ESOPHAGUS

At the present writing thoracic surgery is not capable of successfully treating directly the fundamentally surgical diseases of the esophagus,—carcinoma, ulcer, stricture secondary to erosions of various kinds,—and so in these cases medical or mechanical treatment must for the most part be substituted. And yet surgery has been used indirectly with considerable success, at least as regards symptoms, — a gastrostomy to relieve the esophagus of food irritation, to nourish the patient, and even to dilate the obstruction through the stomach opening. In the case of cardiospasm, or according to many not a spasm of the cardia but of the esophagus above the cardia where it passes through the diaphragm, we are also dealing with a real border-line problem, for neither method of approach has been singularly successful. A non-irritating dietary, olive oil or other lubricant, belladonna—the most important drug — in maximum doses, bromids even combined with dilatation by olive-bougies, or by water or air pressure over a long period of time, is often followed by only partial improvement and a marked tendency to relapse.

Here, of course, we must always recognize two factors of prime importance if we can hope for even partial success, — first, the underlying nervous instability or irritability of many of these cases; and, second, the fact that in many the spasm represents a reflex stimulation from diseased conditions elsewhere, usually from within the abdominal cavity, a chronically diseased appendix, a pyloric or duodenal ulcer, a high grade of visceroptosis, as insisted upon by Rovsing, and possibly even diseased conditions in the prostrate gland or in other pelvic organ. And in these cases removal of appendix, medical or surgical cure of the ulcer, proper support of the displaced viscera, etc., may be necessary to supplement the local measures before success is obtained. Why the level at which the spasm is met is usually the same in the majority of cases is difficult to explain except possibly it is where the esophagus penetrates the diaphragm, and this represents a definite tendency toward constriction. Even in these cases of esophageal spasm resting of the esophagus combined with digital or instrumental dilatation through a gastrostomy opening has been done in a few cases and cures reported thereby. (No better review of this subject could be mentioned than that from the pen of Dr. B. B. V. Lyon recently published.)

In discussing digestive symptoms one should never forget the large role often played by diseased conditions of the teeth and the great debt we owe to dental surgery in helping to clear up many intractable digestive conditions.

CANCER OF THE STOMACH

In discussing gastric cancer there are three main types to be considered,—first, where cancer has developed upon an old ulcer base; secondly, where the cancer symptoms develop often insidiously in cases with previously normal digestion; and, thirdly, cases in which upon a basis of a previous dyspepsia of functional or benign type of long duration symptoms supervene which are finally shown to be due to a malignant growth, practically hopeless therapeutically until our radiological or biological means of correct diagnosis are far more exact than they are at present.

In the first group, cancer developing upon an ulcer, our treatment must largely

depend upon our feeling as to the frequency of transition from ulcer to cancer, considered to be very great by many, notably the Rochester school and its followers, much less by the large majority of clinicians devoting their efforts especially to digestive problems. If every ulcer is a potential cancer there is no border-line problem in this group,—such cases are frankly surgical, and justify immediate operation with resection of the ulcer if possible. And yet our experience has certainly been opposed to such a radical course, and we have felt that only in those cases with falling acid content of gastric juice, with persistent bleeding under bland diet, and with change in the clinical picture, is operation to prevent malignant degeneration always justifiable.

In the second group we have a much more clean cut problem. These are the classical cases of Kussmaul, in which symptoms of dyspepsia without apparent cause appear in the case of patients in the forties or fifties with previously normal digestive histories. Whether the symptoms appear early or late depends largely upon the site and nature of the growth. Unfortunately with the usual seat of predilection, the lesser curvature behind the costal arch, the growth may have reached an astonishing size before any symptoms make their appearance, while if pylorus or cardia be first affected with their signs of obstruction, or anterior surface with its ease of palpation, earlier diagnosis should be easier.

With the failure of colloid selenium and colloid copper, of radium or other forms of radiation, and of the more truly biological methods of treatment, surgery seems to be the only hope. And I feel convinced, and strongly so, that in this group of cases we are absolutely warranted in performing an exploratory operation at the first appearance of digestive symptoms in patients in middle life, whose digestive slate has been previously clean; for I believe firmly from an analysis of many cases operated upon,—not at the time of the first appearance of symptoms, but months later when the diagnosis could be made with surety,—that an earlier operation in certain of these cases would have been productive of a real cure, and in waiting too long for definite diagnosis signs we have taken away the one chance of cure. If we wait for large filling defects on the fluoroscopic screen, or upon the X-ray plate, or for the absence of hydrochloric acid from the digestive juice with increase of the soluble protein content, or even for persistent occult blood in the stool, or any other of the surer signs of cancer, we will have waited too long.

I am unfortunately one of those lacking in faith in the probability of early diagnosis of cancer of the stomach by persistent slight filling defects in the gastric contour. I have seen too many cases definitely diagnosed by this means found on the operating table not to be carcinoma; and so I can not help feeling that until means of earlier diagnosis are furnished us, — more probably from purely biological studies, variations in ferments and anti-ferments, etc., in the blood,—we must perforce either wait too long in these cases or on insufficient evidence, I admit, advise early surgical interference in the hope of a real cure.

ULCER

In the case of gastric and duodenal ulcer certain cases are obviously surgical without discussion, — cicatricial, callous ulcers with increasing obstructive phenomena, those with perigastritis or periduodenitis, suggesting the possibility of early perforation, those with persistent or alarming hemorrhage, those with suggestive evidence of beginning malignant degeneration,—in our experience a small group. Others, on the other hand, according to most clinicians, are purely medical, as the superficial or mucous ulcer of stomach or duodenum. Think how many superficial scars of such ulcers are seen at the autopsy table, although those who believe in the malignant potentiality of such ulcers think that this group also is surgical.

Pyloric obstruction is not a simple condition; it is made up of two factors in varying proportions, — the true organic part and the associated spasm. Our experience in the past few years has made us feel that it is almost impossible approximately to determine the relative role played by each of these except by careful

clinical observation under the most approved dietetic, hygienic and medical therapy, and that in certain cases a meat-free diet or the Sippy treatment, persistence in non-irritating foods, the administration of large doses of belladonna and of alkalies, local heat, etc., sometimes reduce an obstruction of maximum grade to one so slight that it may be scarcely if at all noticeable. Then, too, one must never forget the possibility of an associated lues—in the last three months we have seen three typical cases of ulcer with high-grade obstructive phenomena divest themselves of their symptoms as if by magic under specific treatment.

If an ideal operation were given us for gastric and duodenal ulcer the question of their proper treatment would not be so pertinent, but in the majority of cases such an operation is not possible. Certainly in these cases pyloroplasty is the operation of election, as it leaves the viscus in a comparatively physiological condition, and is not likely to be followed by the unpleasant symptoms met with in other operations. Unfortunately the operation is not applicable in very many cases, due to dense adhesions or posterior situation of the ulcer; and, therefore, in the majority of cases a gastro-enterostomy must be substituted,—an operation singularly unphysiological. It is likely to be followed often by impaired digestion, not so much gastric, it is true, as jejunal and pancreatic, due in the former case to the rapid evacuation of an acid and coarse gastric contents into a portion of gut, primarily habituated to soft alkaline chyme. In the latter case it is to disturbance of the normal method of pancreatic stimulation. And there is always, of course, in addition the possibility of the establishment of a vicious circle, and of the development of toxic symptoms best interpreted as due to a partial high intestinal obstruction. Whether complete resection of the pylorus in association with a gastro-enterostomy facilitates the functioning of the stomach must be seriously considered; for although it adds considerably to the danger and difficulty of the operation, nevertheless, those who practice it claim far better results than by the simple gastro-enterostomy alone. Certainly the much neglected pyloroplasty with its more physiological basis, and the practical impossibility of subsequent obstruction, should always be performed whenever possible.

GALL-BLADDER

Surgery of the upper right quadrant of the abdomen is always more or less unsatisfactory, but in no case more than that of the gall-bladder. To operate or not to operate, balancing the relative value of lessened possibility for malignant degeneration and probability of complete cure on the one hand, with the chance of persistent pain due to adhesions in place of transient pain, various obstructive phenomena, and disturbance of the secretory functions, on the other. Cholecystotomy with the possibility of reformation of stones, or cholecystectomy with its subsequent persistent and intractable diarrhea in a certain number of cases must also be under discussion if operation is to be decided upon. Certainly a number of these cases can be marvelously helped, and sometimes symptomatically cured, by persistence in careful dietetics and medication.

A very interesting group of cases is that which with all the symptoms of gallstones yet which on operation shows no calculi, but only a thick inspissated bile. Perhaps some of the relief of symptoms following cholecystectomy in this group of cases is due to a persistent dilatation of the common duct following this operation, as suggested by the Mayos, and perhaps the diarrhea following cholecystectomy in certain cases may be due to this same common duct dilatation with its attendant increased flow of bile and pancreatic juice into the duodenum.

VISCEROPTOSIS

The pendulum has swung so far back that it is hard to remember that it was but a few years ago that gastropexies and colopexies were frequently done in visceroptosis. We know now that in the vast majority of cases downward displacement of the viscera is medical or orthopedic, if you will, but not surgical. One has but to study these cases under the fluoroscope in both prone and upright position to real-

ize the wide range of movement of all the hollow viscera, and to appreciate what may be done by posture, forced extension, respiratory movements, measures designed to increase abdominal fat, to improve the tone of the abdominal and the intestinal musculature, and the application of suitable abdominal supports. Certainly while some of us may feel that certain of the orthopedists have gone a bit too far, there is more than a germ of truth in their feeling that only by a fundamental change in body form can we hope to get a real cure in this group of cases. It is a condition only to be obtained and obviously so after many months of treatment and is not to be wondered at when we remember that most of these cases have inherited an atypical body form. Our object must be to convert this congenital abnormality into a shape better suited to the upright position of man.

We Americans are far too anxious to get results too quickly; but in this group of cases quick results are impossible. To change the form to which a body is embryologically committed must perforce require great effort, and what is of far more importance, much time. Persistence in posture, rest after meals, proper diet, and various stimulating, strengthening and fattening measures, will often in these cases give marvelous results.

But there are certain conditions associated with visceroptosis in which surgery has a right to be considered, as in the case of intestinal stasis with adhesions and toxic manifestations, which we shall touch upon subsequently, in marked sigmoidal kinking associated with obstinate and intractable constipation in which sigmoidopexy may give remarkable relief, and lastly in a group of cases simulating in their signs and symptoms gastric ulcer with pyloric obstruction. We have followed this last group very carefully for the past few years, making many fluoroscopic studies in both the prone and upright position, and we are firmly convinced that some and probably most of these cases owe their symptomatology to the association of a high-grade downward displacement of the stomach, with a congenitally fixed high duodenum. In the prone position there are practically no symptoms, but in the upright position we have traction, spasm, obstruction, and typical ulcer symptoms. Nothing shows more beautifully the reason for this than studies upon the fluoroscopic screen,—the much higher, not irritated stomach in the prone position, and the low, atonic stomach with the spastic pylorus, difficult evacuation and prepyloric bulge in the upright pose.

Certainly in the more marked cases of this type relief is extremely difficult by the usual means, and in a certain proportion of these cases we have had a pyloroplasty performed with, in most cases, remarkable improvement. After all, this is a rational procedure, for in its very nature the pyloroplasty offers just what the cases need,—a wider pyloric opening, and the practical impossibility of the development of obstructions, as the sphincer muscle is so cut that in its new horseshoe form it can not produce true sphincter action.

Similar treatment is certainly justifiable in those cases of pyloric obstruction in the upright position due to the traction of adhesions between gall-bladder or hepatic flexure and pylorus or duodenum. The origin of these adhesions is problematical. Possibly they are secondary to a mild cholecystitis which has entirely cleared up, or a superficial pyloric-duodenal ulcer that has healed, or are metastatic from diseased conditions elsewhere in the abdominal cavity, such as a chronic, sub-acute or even acute appendicitis, or possibly to a chronic pancreatitis, in which last case Deaver and others believe that a palpable gland at the junction of the hepatic and cystic ducts is pathognomonic. This group of cases has been of singular interest to us from our comparative fluoroscopic studies made in the upright and prone positions. In the former the obstructive signs are marked; in the latter as a rule, entirely absent. The fact of man's predilection for the upright position is really the justification for operation in this group of cases.

And yet I can not help again insisting upon the time element necessary in these cases. To change a body form to which it is embryologically committed must not only take a proper application of the rational treatment, especially deep massage

and proper exercises, because by these means we are firmly convinced that adhesions may be either broken up or materially lengthened with marked diminution of symptoms, but must require much time, many months in practically all cases. Many a medical cure has been frustrated by lack of patience on the part of the doctor or of the patient or both.

ADHESIONS

From very careful fluoroscopic studies in the prone and upright positions under forced respiratory movements, massage, manipulation, etc., we have been singularly impressed by what may be done by mechanical measures for that condition,—the bane alike of surgeon and clinician,—abdominal adhesions. The tendency of different people is very varied in this connection, for with the identical technique, the same amount of handling, every factor apparently the same, one case will form no adhesions, another adhesions of the greatest extent and density, which in turn in one case will seem to produce slight if any symptoms, in another obstructive phenomena leading to complete occlusion. There is an important chapter to be written by the surgeons on what can be done to lessen post-operative adhesions. It is a question of better after-care, early massage, frequent change of posture, careful regulation of diet, better administration of laxatives, etc., or are there deeper underlying conditions which make certain individuals peculiarly liable to adhesion formation? Whatever be the cause, we are quite convinced that careful after-care can lessen adhesion formation. For the past few years in many of our abdominal cases which have come to operation, especially those in which conditions peculiarly favorable to adhesion formation are met with, we insist upon what has been facetiously called by some "our rocking horse treatment," having the patient's position frequently changed from side to side, alternate elevation of the foot and the head of the bed, early and frequent use of laxatives, massage begun as soon as possible, and continued for a considerable time, and if impossible on account of the expense as a substitute, auto-massage with a three- or five-pound cannon ball. And from very careful studies, especially those under the fluoroscopic screen, we are absolutely convinced that adhesion formation can be minimized by this method.

When we are called upon to deal with adhesions which have already formed, whether post-operative or otherwise, here again it is hard to decide without careful study whether surgical or non-surgical treatment offers the best chance of success. Certainly here and in practically all of these border-line cases the interest of the patient will be best conserved by first trying thoroughly and over a sufficient period of time the methods mentioned above. Unfortunately we have no other non-surgical means, for fibrolysin has fallen by the wayside, the use of sodium citrate is in purely the experimental stage, electricity is a frail reed, and even the best administered rest cure with overfeeding, while perhaps lessening certain of the symptoms by increasing intra-abdominal fat and abdominal and intestinal tone, and lessening local intestinal spasm, does not eradicate the cause. In this group let us balance in our minds the cases we have known where one operation for adhesions has been followed by another and yet another with repeated return of signs and symptoms, and those where the one operation for adhesions has been followed by permanent relief, the latter not an inconsiderable group, but usually largely confined to those cases in which the adhesions are localized and not diffuse.

There is one condition in this category that has been peculiarly interesting to us—adhesions in the upper right abdominal quadrant involving gall-bladder, duodenum and pylorus without apparent cause, possibly metastatic from a chronically diseased appendix, possibly due to bacterial invasion through a form of mucous erosion of pylrous or duodenum, possibly to transient cholecystitis, or possibly to a mild pancreatitis. If such a condition is associated with a visceroptosis we have, as mentioned before, the interesting fact that in the prone position there are no symptoms; but in the upright posture the traction of these adhesions may produce a definite pyloric or duodenal obstruction with symptoms very suggestive of ulcer. Medical treatment here is often

very discouraging, and we have in this group, therefore, advised pyloroplasty in certain cases with really very remarkable results, far better than the results obtained by simple separation of adhesions with obviously the tendency to their reformation.

APPENDICITIS

There is really no medical side to the treatment of acute appendicitis except in those cases where operation is obstinately refused, for the condition is fundamentally surgical. But in the chronic variety many pretty problems present themselves—is the condition fundamentally and primarily appendical, or is it but part of a general inflammatory process of low grade involving the terminal ileum, cecum and ascending colon, as, for instance, seen in many cases of high-grade visceroptosis with stasis, dilated, thin-walled gut with deficient tone and increased permeability, and often with unusual peritoneal sheets, such as Lane's band, Jackson's veil, etc., in which obviously an appendectomy will in all probability be productive of little if any permanent relief of symptoms, although we are often deluded by the improvement which follows operation, and which is unquestionably due to the stay in the hospital with its associated rest, careful dieting, etc.? If the condition is primarily appendical, will the new picture presented,—appendical removal but undoubtedly the possibility of local adhesion-formation,—be borne with greater or less fortitude by the sufferer with lower, right quadrant disease, really one of the most difficult of all the many intricate border-line problems and one in which only great study and wide experience can solve in the individual case with a maximum hope of success?

In this group we are not ashamed to admit that we try assiduously diet, massage, belladonna, mineral oil, agar-agar, and oil by rectum before admitting that surgery must be tried, provided, of course, that the chronic course of the disease is not punctuated by an acute exacerbation in which case surgery is obviously the only wise procedure followed, we always insist, by the post-operative treatment we have already mentioned. It is interesting to note that in many of these cases the symptoms are purely epigastric, and simulate closely those of gastric ulcer, and this is probably the reason of Moynihan's famous dictum that the commonest seat of gastric ulcer is in the lower right quadrant of the abdomen.

CHRONIC DIARRHEAS

It is only recently that the chronic diarrheas and dysenteries could in any sense be considered possibly surgical. Of course many of the most intractable forms have been cleared up by more careful methods of study,—as the gastrogenous diarrheas due to the absence of hydrochloric acid in the gastric content and entirely relieved by the administration of this acid by mouth; the thyreo-toxic diarrheas, one and sometimes the only symptom of hyperthyroidism, and in this group most of the old so-called nervous diarrheas probably fall, usually relieved by rest and hyperalimentation, or some form of surgical treatment of the thyroid gland; the chronic amebic dysenteries, often suggested by the eosinophilia of the blood, and frequently marvelously relieved by emetin, or by some form of ipecac by mouth; the diarrhea of sprue temporarily relieved by diet, hydrochloric acid, pancreatic ferments, and change of climate; that of pellagra, helped if the case be not too far advanced by the installation of a proper well-balanced dietary, with especial increase of the animal protein foods; diarrheas of chronic tuberculosis representing either a toxemia, or a true tuberculous enteritis, and treated along climatic, dietetic and hygienic lines, and diarrheas due to various rectal and sigmoidal diseases and often amenable to local treatment.

But in addition to all these there remains a group of cases which Albu has especially studied of persistent diarrhea associated with an ulcerated condition of the rectum and sigmoid, as seen through the sigmoidoscope, and probably of the colon as well, presenting small, superficial ulcerations, probably bacterial, possibly trophic in origin, always small and superficial, and very resistant to treatment. Diet, kaolin or bismuth by mouth; kaolin, silver in various forms (silver nitrate, protargol, argyrol, etc.), potassium per-

manganate, tannic acid, etc. by rectum will cure a certain number of these cases, but not all, and in this latter group surgery in some form is certainly justifiable. We have had no personal experience with Lynch's method of resting the entire large bowel by making a colostomy, ileostomy or cecostomy, and draining all the contents of the small intestine through this, allowing the large bowel to remain dormant until a cure has been affected and requiring many months as a rule. But we have had a number of such cases in which an appendectomy, appendicostomy or cecostomy with subsequent colonic irrigation in the last two cases has been followed by success.

Unquestionably in a very few cases a chronically diseased appendix may produce a persistent diarrhea, and the removal of the diseased organ may bring about a complete cure; but in our experience this comprises a very small group. Appendicostomy or cecostomy with subsequent irrigation of the colon with water, normal salt solution, solutions of silver, tannic acid and other astringents, or potassium permanganate, has been surprisingly successful in the small number of cases of this type so treated in our series, though Albu sounds the warning note that shortly after the permanent closure of the new opening, be it weeks, months, or even longer, there is a marked tendency for these cases to relapse with a reappearance of signs and symptoms. Be that as it may, until the specific bacteriology of this condition is worked out with the possibility of a specific therapy, this or some similar form of treatment is unquestionably justifiable.

STASIS AND AUTO-INTOXICATION

One of the most interesting digestive conditions in the treatment of which medicine and surgery touch hands is that of intestinal stasis and its associated, so-called auto-intoxication.

Practically speaking, it is stasis in the terminal portion of the ileum, cecum and ascending colon that furnishes the major portion of the signs and symptoms presented. Our views as to the motor functions of the large bowel have been so changed by the radiographic and fluoroscopic studies of Holzknecht, Barclay, Judson, Hertz, and especially of Case, that in the picture of intestinal stasis we must always keep in mind these newer conceptions,—the movement of the fecal column *en masse*, the possibility of a functional sphincter above the cecum, and the possible variation of the terminal portion of the ileum from the remainder of this portion of the gut. We must realize that the large bowel is but one part of a closely linked complex organization supplied by sympathetic and vagus fibers, stimulation of the former diminishing, of the latter increasing the intestinal tone, although normally the movements are dependent to a great extent upon the reflexes having their center in the nerve cells of Auerbach's plexus. This interdependence and correlation of the whole gastro-intestinal tract must never be forgotten. It is for this reason that food in the stomach tends to make the ileum empty its contents into the cecum, while there is definite evidence also of an ileo-pyloric reflex as well.

Broadly speaking, any condition which tends to lessen the tone of the abdominal musculature or of the muscles of the intestines themselves or, by pressure, kinking, constriction, or reflex irritation, tends to slow the passage of the intestinal contents may lead to intestinal stasis. Thus we may meet with it after wasting diseases or diseases associated with high temperature and marked toxemia. It is peculiarly likely to occur in splanchnoptosis, a condition which is to be regarded as primarily congenital in the great majority of cases. We may have a congenital atony of musculature, or we may find it as an accompaniment of senile changes. Various conditions may bring it about by diminishing reflex stimulation, causing inhibition of intestinal movements, or by over-stimulation, causing intestinal spasm. Tumors and swellings, either within or without the intestine, stricture due to ulcers, kinking due to adhesions or to change in the intra-abdominal pressure conditions, post-operative adhesions,—all these may be the primary causes of fecal stasis and intestinal atony.

Are not some cases due to a deviation from the normal balance between vagal and sympathetic stimulation, one group

leading to vagotony, the other to sympatheticotony? Is there a true intestinal hormone presiding over the motor function of the intestine, and are not some of the cases due to its diminution or absence? May not the lack of such a peristaltic hormone be the basic cause of the atonic thin-walled cecum and colon so often described by the surgeon in these cases of stasis, and may not some disturbance of internal secretion, possibly from the pancreas, be the cause of the dilated duodenum met with in cases of upper intestinal stasis, regarded by some as a gastro-mesenteric ileus, but extremely difficult to explain on this basis? Why is obstruction or stasis of greater severity the higher its location in the small intestine? Is it because the duodenum and, to a less extent, the jejunum and ileum are also excretory organs, among the excretions from which is to be found a poisonous ferment or toxin of the cholin group, as suggested by Stone and Bernheim?

Broadly speaking, the symptoms referred to intestinal stasis may be divided into two main groups: first, local symptoms, pain, fecal tumor, distention of gut, increased resistance constipation, occasionally alternating with diarrhea; and, second, symptoms referred to other portions of the body, best explained on the basis of a toxemia, although some, from lack of evidence, prefer to regard these as reflex and not toxic manifestations. For ourselves we are unable to see a rational explanation except on the basis of a toxemia.

We reported, in 1911, a number of cases of neuralgia and neuritis probably due to intestinal toxemia, and two years later von Noorden, in his studies on neuritis, concluded that neuritis was often due to a similar cause. Peculiarly interesting are the eye symptoms met with in a small group of cases of toxemia, or possibly bacteremia, ranging from simple transitory dimness of vision and muscae volitantes to severe attacks of choroiditis leading to permanent impairment of sight. We have recently studied a case of the latter associated with marked intestinal stasis and toxic symptoms with a persistently alkaline stool from which we have isolated and are now studying culturally three distinct strains of proteolytic anaerobic bacteria.

The skin lesions are peculiarly interesting because of the isolation by Eppinger from the stool in certain cases of auto-intoxication of a ptomain, which, even in great dilution, produced marked urticaria if applied locally.

Broadly speaking, therefore, we may divide our second group of symptoms into three sub-groups: (1) Those with vague symptoms, and often presenting the typical picture of a psychoneurosis; (2) those with symptoms in other portions of the gastro-intestinal tract sometimes constant and presenting the picture of a gastric or intestinal dyspepsia, sometimes periodic, and here often of a very violent nature, such as acute salivation, acute nausea and vomiting, and acute diarrhea; and (3) where the symptoms are mainly localized in one organ as the eyes, the nerves, the skin, the thyroid, possibly due to lowered resistance, possibly to specificity of toxin.

In certain of these conditions we have without doubt the organic basis of various vague functional disturbances of digestion or of conditions regarded as neurasthenia or psychasthenia, or those that fall into that large group of cases in which without definite complaint the patient is always below par.

Are the acute attacks met with in these cases to be regarded as anaphylactic in nature or as a colossal vagotony? Whatever the explanation, the theory of auto-intoxication unquestionably explains best the symptom-complex presented. Is it a toxin normally present but in excess; is it due to the insufficiency of the liver and other portions of the protective mechanism; is there a marked overgrowth of the Gram-positive proteolytic anaerobes; or is there a perversion of ferments or intestinal excretions? It is very striking what slight changes in molecular constitution are necessary to convert the normal amide bases met with in digestion of the proteins into products of the greatest toxicity, as, for instance, the change from lysin to cadaverin, or arginin to putrescin.

Thanks to the application of the Röntgen rays, our diagnosis of stasis is now comparatively simple,—delayed motility, a persistent shadow beyond the maximum

normal period, redundancy, prolapse, and kinking being easily demonstrable by radiograph or fluoroscope. We must not forget, however, that just as symptoms of excessive intestinal activity have been shown to be due to hyperthyreosis, so the reverse condition — hypothyroidism or myxedema may have the opposite effect upon the intestine, and may produce stasis with its toxemic symptom-complex. In the past two years we have met two cases, each of which has been advised by physician as well as surgeon to have the large bowel resected to relieve the marked symptoms of auto-intoxication, in whom the symptoms cleared up as if by magic under small doses of thyroid extract.

In these cases of so-called auto-intoxication producing either general or local symptoms we have been much interested in testing the sensitiveness of the patient to various forms of protein food — egg, milk, various animal and vegetable proteins,—studying the skin reaction after intradermal injections of the protein solution. In certain cases marked hypersensitiveness to certain proteins is easily demonstrable; and in some of these elimination of these articles from the diet is followed by marked improvement and even cure.

But most of these cases of stasis with toxic symptoms are singularly difficult to handle, and it is for this reason that during the past few years many surgical measures have been suggested in their treatment, although obviously in all cases non-surgical measures should first be given a trial, — a diet stimulating peristalsis, strengthening, often including much acid fruits and soured milk, rest, hydrotherapy and other means of bringing the digestive secretory and antitoxic functions to their highest efficiency, mechanical and physical means to stimulate peristalsis, improve tone, and lessen displacement and angulations, attempts to inhibit the growth of certain bacteria by laxatives, lubricants, irrigations and by the introduction of antagonistic bacteria. If persistence in these measures is devoid of success it is certainly warrantable to have recourse to surgery. As to the operation of election there is wide divergence of opinion. We can not feel that complete or even partial resection is justifiable until the simpler surgical means have been tried. Perhaps we have been unfortunate, but of the cases coming under our observation in which such large mutilating operations have been performed, although in many cases a remarkable early improvement occurred, in most of them within a very few months there was a return to practically the same condition for which the operation had been performed. We feel with Barclay that "the fact that certain wholesale removals are successful (and this undoubtedly is true in a small percentage of cases) is no proof that they were necessary, but rather that somewhere in this large mass lay the cause of trouble," and that "one is astonished not so much at the brilliance of the surgery displayed as of the tolerance of the human body."

In our experience very brilliant results have often been obtained by the simpler operations of appendicostomy, or more often cecostomy, as in most of these cases the appendix had already been removed on the usual assumption that it is the "fons et origo" of most intestinal and many gastric disorders. Through the artificial opening irrigation with various solutions is to be carried on for a very considerable period of time, and we have often introduced directly emulsions of lactic acid bacilli in the hope, usually vain, that they might overgrow the offending bacteria. There is no more fascinating study than that of these cases of stasis with their vague symptomatology, their complexity of cause, and their resistance to treatment; and we meet no border-line conditions in which our armamentarium, both medical and surgical, is so taxed to bring about a cure. That the poisons themselves have so rarely been demonstrated is no proof that they are not present, but rather calls attention to their extreme complexity and the minimal amounts in which they must exist.

CONCLUSIONS

If surgery had solved with complete satisfaction these conditions which are obviously surgical in nature, — ulcer with obstruction or adhesions or both, gall-bladder disease, abdominal adhesions and chronic appendicitis,—there would be no question of non-surgical means. But it is

in just these cases that surgery can not promise a complete cure, and one has but to mention the unsatisfactory results in many cases of gastroenterostomy (Mathieu, in an analysis of his very large series in which gastroenterostomy was done, found practically none in which no untoward symptoms did not develop), the disadvantages of both cholecystotomy and cholecystectomy and the return of symptoms sometimes even more marked than before, after the separation of adhesions or removal of an obviously diseased appendix to realize how true this is. Certainly in chronic abdominal conditions surgery is a two-edged sword: it may bring relief, it may do harm, for it is undoubtedly true that the more acute the condition and the more urgent the need of immediate surgical interference, the more satisfactory as a rule the ultimate result.

In this loose stringing together of thoughts on border-line problems we realize, of course, how incomplete the survey has been, and yet there are certain conclusions which we feel are justifiable. It is essential for a proper appreciation of many pathological conditions of the digestive tract to have closer co-operation between physician and surgeon, because in many of these cases it is only by such a rapprochement that either can have a true conception of the pathological process presented and of its therapeutic needs. It is essential that the physician be present at operations upon his patient, first, because by this autopsy *in vivo* he can as by no other means confirm or refute his diagnosis; and, second, because it will give him an opportunity to study the surgical as well as the medical means of therapeutic approach.

As regards the proper handling of this group of chronic abdominal conditions, it seems to us that at the present writing there is far too great a tendency to treat them surgically without giving a fair and a long trial to medical, dietetic and physical measures, although we admit, of course, that in many, in fact, possibly in the majority of these cases, surgery will be called into play sooner or later. Patients can not realize the ultimate possibilities, their vision is myopic, and their aim is for the quick result; but we physicians should curb this tendency for a twofold reason: we should make the patient realize the possibilities if sufficient time be given of obtaining, if not a cure, at least relief of symptoms; and also accentuate the possibility of the reappearance of symptoms after operative treatment. Certainly nothing is so detrimental to a true appreciation of the after-results of surgery in these cases as the fact that in almost all the surgeon sees them only during their hospital stay, where they have the benefit of rest, careful diet, and the best post-operative care. When they leave the hospital the surgeon usually sees them no more, for if there is a return of the same or the appearance of new and sometimes worse symptoms it is not to the surgeon but to the physician that they return for relief. To lessen the inherent optimism of the surgeon as to ultimate results, is it not our duty, painful though it may be, to notify him of the failure of a supposedly successful operation, and is it not only by such means that the relative value of medical and surgical treatment in these various abdominal conditions may be properly and fairly determined?

No one is more enthusiastic about the debt we owe to the surgeon in gastro-intestinal pathology; no one is more prone to ask for his help in these conditions, but we feel, and feel very strongly, that while in the acute abdominal conditions the results of surgery are so brilliant as to be beyond peradventure, in the chronic cases complete success is so elusive that it is only by the use of every method at our command that the best result can be attained. The brilliant success of surgery in acute abdominal conditions has, we feel sure, raised too high the hopes in the laity, surgeons, and most clinicians as to its all-healing effects in other abdominal conditions. But an honest study of the chronic cases not in the few weeks or possibly few months after the operation, but during the succeeding year or years can not fail to convince us that in this field surgery is not omnipotent, and only by the use of every therapeutic weapon,—and here medicine, hygiene, diet, posture, massage, and other physical methods should be tried before surgery is advised,—may we hope to

get the best results in this group of cases, among the most difficult both as regards diagnosis and treatment, these true border-line abdominal conditions.

AUTHORS' ABSTRACTS

Medicine

Differentiation Between Upper (Central) and Lower (Peripheral) Motor Neuron Involvement. George B. Fletcher, Little Rock, Ark., Journal of the Arkansas Medical Society, August, 1916.

A simple diagnosis of "paralysis" without at least an attempt to find out whether the lesion is in the central or peripheral motor neuron is the same as no diagnosis at all.

In order that we may understandingly examine a case of paralysis we must be familiar with the anatomy and physiology of the motor tracts. The motor tracts may be conveniently divided into

I. Cortico-spinal
   (a) Anterior pyramidal tract.
   (b) Lateral pyramidal tract.

II. Sub-cortico-spinal
   (a) Rubeo-spinal.
   (b) Tecto-spinal.
   (c) Thalamo-spinal.
   (d) Vestibulo-spinal.

All of these tracts are connected, more or less, directly with the motor cortex and with the anterior horn cells in the cord.

The pyramidal tracts exercise an influence upon the important mechanism of the regulation of tonus and upon the production of the tendon reflex. Without their inhibitory action tonus and reflex would not present such constant relations as is actually the case. If, however, the pyramids are destroyed, hypertonia and hyperreflexion take the upper hand to a degree hindering motion.

The motor tract is divided into an upper, central or cortico-spinal neuron extending from the motor cortex in the cerebrum to the cells in the anterior horn of the cord, and into a lower, peripheral or spino-muscular neuron extending from the cells of the anterior horn to the muscle end plates.

The symptoms produced by involvement of the two neurons are wholly different.

In the upper neuron type one finds (example, cerebral apoplexy):

1. Diffuse muscle groups affected.
2. Spasticity of paralyzed muscles (hypertonicity).
3. No muscular atrophy except from disuse.
4. Electric reactions normal.
5. Deep reflexes present usually exaggerated to clonus.
6. Plantar reflex extensor in type (Babinski's phenomenon).

In the lower type (example, poliomyelitis):

1. Individual muscles may be affected.
2. Flaccidity and atonicity of the paralyzed muscles.
3. Atrophy of paralyzed muscles.
4. Reaction of degeneration.
5. Deep reflexes diminished or absent.
6. Plantar reflex normal flexor type.

Specific Treatment of Infantile Paralysis: Abraham Sophian, Kansas City, Mo., Jour. A. M. A., August 5, 1916, p. 426.

Observations were made by the author in the Kingston Avenue Contagious Hospital, New York City, which had over 300 cases during the studies.

The specific treatment of infantile paralysis may be classified into (1) Relief of hydrocephalus; (2) Intraspinal injection of serum, normal human, horse or convalescent serum; (3) Control of special symptoms as respiratory paralysis; (4) Symptomatic general treatment; and (5) General treatment.

1. Hydrocephalus is a most important feature of the disease and should be relieved by lumbar puncture.

2. Intraspinal serum treatment. A highly immune specific serum has not been produced. Any alien serum injected intraspinally produces a sharp leukocytosis. This is one of the important effects following the intraspinal injection of the anti-meningitis serum for epidemic meningitis.

The probable value of a hyperleukocytosis in the cerebrospinal fluid in poliomyelitis, a disease produced by an infectious agent of relatively low virulence, should be considerable.

In order to be of most help, the serum would have to be used very early in the disease, during the acute inflammatory stage, if possible in the preparalytic stage, especially if prevention of paralysis and abortion of the disease is hoped for. The active, acute inflammatory stage of the disease is so short that it is often impossible to inject more than one dose of serum in the important early stage. Serum injected intraspinally should be injected under the usual precautions of strict asepsis, and control of the dose by coincident blood pressure observations.

In this preliminary report ten cases were treated with normal horse serum and four with convalescent serum.

Twelve to twenty-four hours after horse serum injection the cerebro-spinal fluid shows a marked hyperleukocystosis. Two cases treated with normal horse serum and another with convalescent serum were promptly aborted with complete recovery. The earlier the cases were treated, the more pronounced the benefit.

Intraspinal injection of epinephrin was used in three cases. In one there was considerable stimulation after injection, but no specific changes were noted.

Respiratory paralysis is the most common cause of death and should be treated early. Oxygen administered under pressure keeps, and artificial respiration should be used where necessary.

TROPICAL DISEASES AND PUBLIC HEALTH

SYPHILIS IN ITS RELATION TO PUBLIC HEALTH*

By Loyd Thompson, Ph.B., M.D.,
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For nearly four centuries the medical world has been divided upon the subject of the origin of syphilis. Did this now world-wide disease have its beginning in the dim recesses of antiquity and be transmitted in an uninterrupted stream to modern times; or, was it born overnight, as it were, at the close of the fifteenth century? Was syphilis known to the ancients, or did Columbus' men after their long, forced continence contract it from the native women of the Island of Espanola and introduce it into Europe upon their return? These are the questions which have vexed syphilographers for four hundred years; and in spite of the weight of authority on both sides, they have not yet been answered with certainty.

However, be that as it may, it is beyond dispute that following the invasion of Italy by Charles VIII there was a rapid spread of syphilis over all Europe. It has been pointed out that the disease manifested a very exaggerated course at that time. It was, however, in all probability complicated by other diseases; but notwithstanding this, many physicians soon described with fair accuracy its lesions and symptoms.

The history of syphilis from this time to that of John Hunter is practically the history of medicine. There is scarcely a name with which is connected any advancement of the healing art that is not found in the syphilology of these years.

Probably no other name in all the history of medicine stands out more prominently than that of John Hunter. Great beyond his time as a surgeon, he undoubtedly set back the knowledge of syphilis many decades. Convinced of the unity of syphilis and gonorrhea, Hunter inoculated himself on the glans and prepuce with gonorrheal pus. When a chancre developed, followed by constitutional syphilis, he considered it proof positive of his contentions.[1]

While this experiment of Hunter's and his false interpretation of it dominated syphilology until Ricord disproved it, a few men disagreed with the great surgeon and had the courage of their convictions. Among these may be mentioned Benjamin Bell, who in his work on venereal diseases maintained the duality of syphilis and gonorrhea.[2]

Wherever syphilis is studied, will be felt the influence of the work of Phillipe Ricord; and with him it may be said began the modern knowledge of syphilis. He was described by Oliver Wendell Holmes as "the Voltaire of pelvic literature, a skeptic as to the morality of the race in general, who would have submitted Diana to treatment with his mineral specifics, and ordered a course of blue pills for the vestal virgins." This great syphilologist by over twenty-five hundred inoculations proved conclusively the duality of syphilis and gonorrhea, although he did not consider that the latter possessed a specific virus.

It would be impossible even to mention the names of all the men who have contributed to the knowledge of syphilis since Ricord showed the way. Such leaders as Virchow and Fournier lent the aid of their master minds to the elucidation of its problems.

The modern renaissance of syphilis, however, may be said to have begun with the epoch-making work of Metchnikoff and Roux,[3] who in 1903 succeeded in transmitting this disease to monkeys. Then followed in rapid succession the finding of the infecting organism by Schaudinn,[4] the announcement of the complement-fixation test for syphilis by Wassermann,[5] the discovery of salvarsan by Ehrlich,[6]

*Read in Section on Public Health, Southern Medical Association, Ninth Annual Meeting, Dallas, Tex., Nov. 8-11, 1915.

the cultivation of the *treponema pallidum* and the use of cultures for diagnostic purposes by Noguchi,[7] and finally the demonstration of this organism in the brains of paretics by Noguchi and Moore.[8]

One of the most striking features of syphilis is its world-wide distribution. There is scarcely a spot on the globe where human beings reside which has not harbored this ubiquitous disease. It is found in the gold camps of the Yukon and among the ivory hunters of the Congo; on the vast steppes of Siberia, and the plains of Argentine. It is, however, especially a disease of dense population, whether temporary or permanent. In the great cities of the world—London, Paris, New York, Berlin—syphilitics are numbered by the thousands; and such multitudes as gather together for great fairs and expositions, as Nijni-Novgorod, Chicago and St. Louis, leave syphilis in their wake.

It has been affirmed that Iceland is peculiarly free from this disease. If such is the case, it would seem that this is due, not to the geographical situation, but to the simple lives and morality of the inhabitants.

Livingston has stated that when the natives of Central Africa contract syphilis on the coast it disappears without treatment upon their return. This statement must be taken with the greatest reserve, for it is a well known fact that apparent spontaneous cures have occurred when in reality the disease was lying dormant.

It would be well nigh impossible to name all the countries in which syphilis is found, much less trace the source of the disease in each.

In Europe, Russia with her vast hoards is infected; Germany, France and Italy contain hotbeds of pollution; while England with her great cities, harbors syphilitics in immense numbers.

Passing to Asia, we find the disease most prevalent in China and Japan, where crowded districts are so common. In the United States the great cities, New York, Chicago, Philadelphia, St. Louis, San Francisco, and the lesser ones, even down to the smallest villages, contain syphilis to a greater or lesser extent. It is, however, a matter of common observance among physicians of certain rural districts that syphilis is rarely encountered. The writer has talked with a number of such who informed him that in the course of several years' practice they had seen but one or two cases.

It will be seen from the above that syphilis is an almost omnipresent disease; and yet from the very nature of it, it is one of the most difficult concerning which accurate statistics may be obtained.

Many estimates as to the prevalence of syphilis have been made; those of Erb and Fournier probably being the best known. The former considered that of the adult population of Berlin, 12% were infected, while the latter estimated that 15% of the adult population of Paris had syphilis.

In December, 1912, the Department of Health of the City of New York sent a circular letter to 7,000 physicians of Greater New York, requesting the number of cases of venereal disease seen during the past year.[9] Of the 7,000 physicians, only 2,217 replied; and they reported 13,350 cases of syphilis. The number of physicians reporting represents less than one-third of the total number of phsicians; and if those who did not report had seen as many syphilitics as those who did report, the total number would be approximately 40,000. Estimating the population of Greater New York at about five millions, the portion infected with syphilis would be 0.8%. The writer considers this an exceedingly low figure, because there are many syphilitics who during a given year do not see a physician.

In our present state of municipal and state control of disease it would be impossible to make a complete survey of the population in regard to syphilis. But it is possible with certain units of population, such as those in hospitals, eleemosynary institutions, penitentiaries, etc. Indeed, such investigations have been made, especially in hospitals, and the results obtained have been most instructive.

For example, Hammond[10] applied the Wassermann reaction to the entire population of the New Jersey State Hospital, finding 6.3% positive.

Lucus,[11] by examining 111 cases in the Children's Hospital in Boston, found 31% were syphilitic.

Southard[12] reported that 23% of 6,000

Wassermann tests performed in the Harvard Neuropathologic Testing Laboratory were positive. He stated, however, that the cases were in many instances picked likely to be positive; and therefore the percentage was undoubtedly very much higher than it otherwise would have been.

The same fact applies to the writer's series performed in the Arkansas State Hospital for Nervous Diseases, where 33% of 1,000 tests were found to give positive results. The practice in this institution was to make serological investigations for syphilis only in such cases as gave a suspicious history or upon physical examination showed possible evidence of luetic infection.

Of all the social units, the military services, Army and Navy, present probably the best field for investigation into the prevalence of syphilis; for in these services the individuals are kept under more or less strict surveillance. In the British Army[13] the admission for syphilis per 1,000 of strength varied from 96.43 in 1869, to 179.37 in 1886, to 19.19 in 1908. In the Army of the United States the figures have never reached so high as in the British Army, nor have they gone so low. The highest number of admissions for syphilis per 1,000 was in 1867, when the figures were 117, while the lowest mark was reached in 1908, when there were but 19.99 per 1,000.

In his report for the year 1914,[14] the Surgeon-General of the United States Army says: "From recent investigations it is, indeed, probable that the frequency of venereal diseases among our soldiers is less than among adult males in the cities of the country." This statement is borne out by the findings of Veddar,[15] who has shown that of 1,577 white enlisted men upon whom a Wassermann test was performed; 16.08% were positive; while of 1,019 recruits 16.77% were positive.

It is also interesting to note that of 621 West Point cadets, Vedder found 5.46% giving positive Wassermann tests.

From these findings and from figures deduced from the causes of rejection of recruits, Vedder estimates that 20% of the male population of the country between the ages of 20 and 30 of the general class from which the recruits come, are syphilitic and that at least 5% of college students are infected.

While syphilis as a rule, especially in the early periods, is not a disease to incapacitate its victim for work, it may pursue its insidious course until the vital organs are attacked and in one way or another rob the individual of his ability to gain a livelihood. It is probable, however, that nearly every syphilitic loses some time from his accustomed vocation, even in the earlier stages of the disease.

In the United States Army the total number of days lost on account of syphilis during the year 1913 was 38,597, which represents a monetary value of approximately $53,000. In those conditions caused by syphilis, which have been designated as parasyphilitic, of course the economic loss is much greater. Tabetics, as a rule, are unable to perform their accustomed work while paretics not only are unable to perform their accustomed work, but very frequently in attempting to do so make grave financial errors and cause great loss to themselves or their employers.

The old adage that "syphilis never kills" is, of course, false; and while it is true that it is most rare nowadays to see deaths due to acquired syphilis in the acute stages, yet there are many deaths each year that are undoubtedly hastened by this disease, and also many deaths which can be directly attributed to its later manifestations. Hereditary syphilis also causes many deaths of infants and kills *in utero* many others.

Ravogli[16] collected statistics from the Cincinnati City Hospital from 1888 to 1907, and found that of 100,613 patients and 9,705 deaths only 168 were caused by syphilis.

In the United States Army of about 81,000 men there were 397 deaths due to all causes during the year 1913; and of these only five were due to syphilis and its results.[17]

According to the Mortality Statistics of the Bureau of the Census the number of deaths from syphilis in the registration area of the United States during the year 1912 was 3,941. Deaths from paresis amounted to 4,053, while tabes claimed 1,588, making a total of 9,582 deaths di-

rectly due to syphilis. The total for 1911 was 8,433, and for 1910, 7,600. Typhoid fever killed but 9,982 in 1913, while smallpox, once the scourge of the race, destroyed only 165 persons during the same period.

The registration area of the United States comprises about two-thirds of the entire population; so it may readily be seen that if the registration area is representative of the whole country, and there is no reason to think to the contrary, the total number of deaths from syphilis in the United States for the years given below was as follows:

1910	10,132
1911	11,244
1912	12,776

In all probability these figures are too low, as many physicians do not report deaths due to syphilis out of deference to the relations of the deceased; and undoubtedly many deaths from syphilis occur where an error in diagnosis had been made. It is probable that the increase in the number of deaths from syphilis shown from 1910 to 1912 was due, in a measure at least, to more correct diagnoses being made. However, the fact remains that an appalling number of deaths from syphilis do occur; that the number of persons suffering from syphilis in some localities is as high as 1% of the entire population; and that the economic loss to the nation is almost beyond compute.

The statement of an eminent foreign visitor to the International Congress of Hygiene and Demography in Washington, after visiting the prominent medical centers of the country, that in none of the clinics of Europe was there so much syphilis as he saw in the United States, and that if measures were not taken for its suppression it would soon cause marked deterioration of the race, certainly furnishes food for thought.

Aside from the deaths caused directly by syphilis, aside from the abortions it claims, aside from the physical suffering it entails, no other disease has evoked so much mental agony, both to those who have contracted it through immoral acts and its innocent victims, and also to those near and dear to the sufferers. This mental anguish alone has undoubtedly very materially lessened the effectiveness of the individual and in not a few instances has driven its victim to a suicide's grave.

The ultimate goal of the medical profession is to banish disease from the face of the earth. With syphilis this would be a comparatively easy task were it not for the fact that its propagation is so intimately woven into the very fabric of society. In the vast majority of cases syphilis is transmitted during the sexual act, and as the gratification of the sexual passion is one of the primative appetites in man, its control is most difficult. Inasmuch as it is impossible for society to control the sexual appetite of the individual, it devolves upon society to institute measures for the prevention of venereal disease.

Such methods consist of education and personal and public prophylaxis. If the youth of the land be taught the danger of venereal diseases and that continence is compatable with health, a great stride will be made. This, however, alone will not solve the problem.

Personal prophylaxis if it could be systematically employed would in a comparatively short time stamp out the disease. The use of 30 to 50% calomel ointment immediately after illicit intercourse will in the vast majority of cases prevent syphilis. It has been suggested that the institution of such measures would place a premium on prostitution, take the dread of the disease away from the individual; and that if a man exposes himself to infection he should suffer the consequences. This would be very well if it were certain that he would be the only one to suffer. But as every syphilitic is at least potentially a source of danger to many others, it is our duty as physicians to prevent every case of syphilis within our power.

The control and medical examination of prostitutes, while in some respects desirable, does not reach clandestine prostitution, which is a great source of syphilitic infection.

The segregation of syphilitics, if it could be brought about, would of course rid the world of the scourge, but in our present state of social development this is impossible.

The final solution of the problem con-

sists in the registration of all cases and the institution of vigorous treatment. As syphilis is largely a disease of the underworld and the majority of those who contract it are ashamed of it, it would be necessary to place a severe penalty upon physicians for not reporting such cases.

Wassermann surveys of the inmates of all prisons, eleemosynary institutions, etc., should be made. All immigrants should be carefully examined for evidence of syphilis, including a Wassermann test, and if found luetic, should be denied entrance to the country. All applicants for civil service positions should be compelled to have Wassermann tests and if found positive should not be given employment. From this it would not be a far cry to persuading employers in all lines to compel their employees to present a clean bill of health in regard to syphilis.

A marriage license should not be granted to any one without a thorough physical examination and a negative Wassermann reaction showing the probable absence of syphilis. These examinations should be made by the city or county physicians and for a nominal charge.

Where prostitution is permitted at all it should be under strict surveillance and regular medical inspection, including a Wassermann reaction of all prostitutes, should be made.

By these procedures, especially making syphilis a reportable disease, it would not be long before the health authorities would have a fairly complete knowledge of the prevalence of syphilis in a given community.

With this accomplished, all syphilitics should be forced to take treatment, from private physicians if they prefer, or from the city or county physicians, until they are cured. The standard of cure should be fixed by law, and all patients compelled to conform to it. A severe penalty should be imposed upon those failing to report for treatment.

During the time when infection through intermediate contact is most likely to occur, all patients whose employment makes them especially dangerous to others should be compelled to stop work. This, in the majority of cases, would not be for long.

The author is aware that such drastic procedures as have been outlined would be extremely costly, but the benefit to be derived could not be estimated in dollars and cents.

The time is ripe for the eradication of this disease of the ages. The methods of transmission are known, the cause is no longer a secret, and the cure has been discovered. It only remains for us to apply our knowledge, to compel our legislators to pass the laws we need, to see that these laws are enforced, and the "great red plague" will be a thing of the past.

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Note.—The above paper was discussed in connection with one by Dr. Isadore Dyer, of New Orleans, La., entitled "The Sex Question in Public Health." Dr. Dyer's paper and all the discussion appeared in the February issue, pp. 134-141.

SOME PUBLIC HEALTH ASPECTS OF THE CANCER PROBLEM*

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During the last two or three years public interest in the cancer problem, developing to an unusual degree, has crystalized into a widespread campaign carried on by national and local agencies to reduce the

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mortality from this disease by teaching the need of the earliest possible diagnosis and treatment. Meanwhile, scientific research into the nature and cause of cancer, still the foremost problem of medical biology, continues with unabated zeal in many well-equipped laboratories and hospitals. The public, though impatient for results, is learning that progress toward this particular goal of human knowledge seems to lie in the slow accumulation of separate facts arrived at only by generous expenditure of time and patience in each case. In the expectation of some epoch-making discovery there has been perhaps, a tendency to forget the practical importance of the great body of positive knowledge of cancer already in our possession, and one of the chief objects of the educational campaign is to disseminate and apply this knowledge which we already have. It is to be hoped that all these efforts promise real progress against one of the most ancient and formidable enemies of the human race, even if much time has necessarily been spent in mobilizing resources and planning the attack.

Our adversary is solidly entrenched. Cancer is one of the half dozen leading causes of death in the United States; it takes an annual toll of more than half as many lives as tuberculosis, which still far outdistances its nearest rival in this mortal competition. The steady increase in the recorded cancer death rate still continues and after full allowance for the imperfections of American vital statistics and for the factor of imperfect diagnosis, many critical investigators believe that the figures reflect a real and not merely an apparent increase of the disease. The estimate of 75,000 deaths a year in the United States which was current on good authority last year, must now be raised to 80,000. How shall this yearly sacrifice be prevented from reaching 100,000?

First of all, many thoughtful members of the medical profession believe, by frankly copying the methods which have given such good results in the war on tuberculosis. In the one case as in the other an entirely new psychology must prevail. The man and the woman in the street must give over the old attitude of despair, concealment, and neglect, and learn of cancer, as they have of tuberculosis, that there is every hope in early diagnosis and treatment. Public and profession alike must share in the knowledge that means power, —power to save many a life now needlessly sacrificed through ignorance and delay, through mysticism and quackery. The world awaits a more complete knowledge of cancer etiology and earnestly hopes it will bring a better cure than surgery. Meanwhile there is little else that offers reliable hope of cure. But the public almost wholly fails to realize how great that hope is in the beginning, and how rapidly it fades with delay. If the elements of present established knowledge of cancer could be thoroughly disseminated among laymen and doctors it would not only bring about a more hopeful attitude generally, but would undoubtedly bring many more patients to consultation in the early stages and thereby increase the proportion of permanent cures. It is, indeed, essentially a volunteer army that must set up the effective defense against our ancient foe,—a multitude of enlightened men and women rationally and sanely ready to face the facts, study the enemy's methods, learn the indubitable signs of his approach and act promptly and courageously on their knowledge.

In thus attacking the cancer problem from the new angle of social psychology, perhaps more conscious effort has been applied and greater results obtained in the last two years than ever before in this country. To be sure, there had long been a realization of what was needed and certain energetic spirits had inspired more or less isolated attempts to spread among the people an effective knowledge of early cancer. Dr. Carstens of Detroit, an incorrigible enthusiast, addressed numerous medical and lay audiences with the zeal of a missionary, and finally persuaded the Michigan State Board of Health to publish in 1909 a cancer circular for popular distribution, which appears to have been the first issued by any American health department. A committee of the Pennsylvania State Medical Society including Dr. William L. Rodman, Dr. John G. Clark, Dr. J. M. Wainright and others was probably the pioneer formal organization in this field, and after continuous existence it still remains one of the most effective present agencies, particularly with respect to work within the profession. The American Medical Association appointed a can-

cer committee several years ago, and has recently made it identical with the committee of the Clinical Congress of Surgeons, headed by Dr. Thomas S. Cullen of Baltimore, at whose suggestion a number of widely circulated magazine articles were written by Samuel Hopkins Adams. You in the South are familiar with the work of Dr. Joseph C. Bloodgood and his painstaking attempt to collect and present an exact account of operative results in the various forms of the disease at one of the leading American hospitals. In 1913, an attempt was made to co-ordinate all such educational work by the formation of a special national association. For a year or two previously a committee of the American Gynecological Society consisting of Dr. LeRoy Broun, Dr. Howard C. Taylor, and Dr. Frederick J. Taussig had been considering ways and means of instructing the public. Coincident with the report of this committee, Mr. Frederick L. Hoffman, one of the foremost American statisticians, presented a notable address on the menace of cancer, with specific suggestions for educational organization. The Gynecological Society thereupon obtained the co-operation of nearly all the coordinate special societies which constitute the American Congress of Physicians and Surgeons, and also enlisted the financial support of a group of prominent laymen and women in launching the American Society for the Control of Cancer. Subsequently the new organization was indorsed by the American Medical Association, the Western and Southern Surgical Associations, the American Surgical Association, and practically all the state societies. The design of the Cancer Society is "to disseminate knowledge concerning the symptoms, diagnosis, treatment and prevention of cancer, to investigate the conditions under which cancer is found and to compile statistics in regard thereto." The movement thus started in America merely applies the principles made familiar by the work of Winter in Germany, Childe in England and similar pioneers in other countries, in teaching the public that patients must do their part by seeking treatment in time.

You may approve of this program as a general proposition and still reserve some doubt as to how it bears upon the immediate and possibly somewhat circumscribed problems of the public health official. It is this phase of the subject that I have been asked to discuss. To consider even briefly the public health aspect of the cancer problem it may be desirable to establish that there is such an aspect. Thoughtful writers have urged that cancer falls wholly within the domain of therapeutic as opposed to preventive medicine. It must be admitted that the burden of proof is upon those who would add this to the lengthening list of problems of sanitation and infection which call for intervention by the health officer. Yet we believe that in the not distant future a broader view will prevail and definite activities to combat cancer, as well as other chronic and degenerative diseases will be embraced in the ever widening program of the progressive health department. It is not necessary here to repeat the now familiar evidence that these diseases appear largely to account for the increasing death rate of middle and later adult life, while the most notable triumphs of sanitary science have been won against the infectious diseases and in the age groups below thirty. Just as government is inevitably concerning itself more and more with all phases of public welfare, so the public health service, sharing proportionately in this general, and on the whole beneficial expansion of function, will indubitably embrace in one way or another, some concern with all the diseases that seriously menace social welfare and are, even in the broadest sense, preventable. To no small extent we believe that cancer like tuberculosis, is a social and public health problem, amenable to certain measures of public intervention and control. A disease which causes one death in eleven over the age of forty presents a problem which the public health service ought not dismiss as none of its affair. Reflecting a socialization of interests and remedies which is already upon us whether we approve or not, the people will presently ask the State what it is doing in their interest about such a disease—and the health officer will have to answer. Of course the ordinary measures of administrative control, such as isolation, disinfection and routine supervision are not called for. Reporting of cases is not usual, though it furnishes in some states such as Kansas, the starting point of important and useful special statistical studies of prevalence and etiologic

factors. Nor are the broader questions of public sanitary intervention, such as the effect of housing and congestion of population clearly raised in regard to cancer. Yet there remain certain duties which the public health service is more and more clearly called upon to discharge in relation to this disease. We may consider them under the headings of educational work, laboratory diagnosis and statistical research.

I

The discussion of the educational function of health departments need not long detain us. The theoretical basis of the educational campaign in general has already been touched upon. Even those who most hesitate to accept the view that cancer is in any respect a public health problem would probably agree that in its educational as opposed to its administrative or police activities the health department will find the most suitable point of application of its interest in this subject. One finds, indeed, that several of the state departments had begun to teach people about cancer long before the present effort to organize such propaganda on a national basis. The publication of a circular by the Michigan State Board of Health in 1909 has already been mentioned. The Virginia State Board also published in 1911 a circular entitled, "Cancer,—What Our People Should Know About It." In 1912 the Kentucky State Department reprinted a popular article which had appeared in a woman's magazine. In Kansas, the State Board of Health has for some time cooperated with the educational committee of the state medical society in distributing a special bulletin containing reprints of Samuel Hopkins Adams' article and a list of other approved popular articles. The joint committee has organized a health lecture campaign throughout Kansas and last Winter talks on cancer were given before more than fifty women's clubs. A standard lecture has been prepared with carefully selected lantern illustrations.

With the organization of the National Society a definite plan of co-operation with state and local boards of health was at once adopted. In general it was felt that the proper function of such a central organization should be to enlist the active interest of all appropriate state and local agencies and provide them with suggestions and data from authoritative sources. Among such local agencies the state and county medical societies, universities, women's clubs, industrial, fraternal and church organizations may all be expected to participate. But the state and local health departments, frequently instructed by law to inform the public on matters relating to disease, should, above all, assume the leadership in local campaigns of cancer education. Accordingly the National Society has made special efforts to be of service to health officers. Endeavoring to act as a central clearing house for the exchange of ideas the Society maintains a regular information service to health departments and transmits from time to time accounts of what various boards of health are doing, together with articles for use in the monthly publications and suggestions for local newspaper publicity.

This policy of co-operation with health officers, consistently pursued during the two years the National Society has been at work, has thoroughly justified itself. It would only weary you to recount the details of what many of the leading state and city health officers have already accomplished and have in preparation. Suffice it to say that the state boards of South Carolina, West Virginia, Florida, Louisiana, Texas, New York, Massachusetts, Vermont, New Hampshire, Connecticut, Idaho, Nebraska, Ohio, Arizona, Indiana, New Jersey, in addition to the pioneer states previously mentioned, have in one way or another taken part in the cancer campaign. So varied and increasing are these activities that it is difficult to keep track of them all and be sure that even a summary statement is complete. New efforts are noted almost every week. Several leading city departments such as those of New York, Philadelphia, Chicago, Newark, and Toronto have done excellent work. Nor is a large appropriation and staff essential. Recently the work of the health officer of South Orange, N. J., in preparing a cancer leaflet and having it distributed from house to house through the village, along with similar circulars on tuberculosis, milk, infant diseases, etc., shows what an active local health department can do even in a small place.

Some of the state departments have followed the example of Virginia and Mich-

igan in publishing special cancer bulletins. North Carolina with characteristic efficiency has recently prepared a new popular circular and is distributing thousands of copies of it, besides publishing frequent articles in its Monthly Bulletin which goes to 45,000 homes. West Virginia is about to reprint as a special circular an excellent article recently published in its Bulletin. A number of state boards have given articles to the newspapers, particularly those of Idaho, New Jersey, Connecticut and New York. In the latter state remarkable health publicity work has been accomplished under the new and highly effective form of organization of the public health service. For a time a series of articles called "Health Hints" were furnished weekly in electrotype form to five hundred newspapers throughout the state. An article on cancer was included in this series and two charts summarizing the early signs of the disease and the importance of early recognition and prompt surgical treatment were included in a health exhibit which has been reproduced for display at meetings, and in libraries and other public buildings.

Much of the best work is being done in the South. In Louisiana and Florida circulars provided by the National Society are distributed from the health trains which have become such an efficient means of public education in the Southern States. Copy for a circular for the same purpose has been prepared for the Texas Board of Health in co-operation with the Texas Public Health Association.

Doubtless enough has been said to indicate how widely this topic has already been taken up by state and city boards of health throughout the country. There seems to be no reason why many other state departments and local health officers should not follow suit. At any rate, the object of the present discussion will have been attained if it has been made clear that their participation in the cancer campaign will be thoroughly justified, undoubtedly advisable, and unquestionably effective.

II

After careful consideration, the Executive Council of the American Society for the Control of Cancer has recently decided to urge that facilities for the laboratory diagnosis of cancer be offered free by the public authorities, especially state boards of health. It is quite true that the examination of specimens of suspected cancerous tissue falls in a different category from the routine examinations for the diagnosis of diphtheria, tuberculosis and other infectious diseases. Nevertheless it is believed that the inclusion of cancer within the scope of the public health laboratory is now called for and advisable. At least until medical science solves the etiological problem of cancer and produces the long hoped for therapeutic measures which shall displace surgery, the sole hope of reducing the cancer death rate and increasing the number of permanent cures lies in earlier recognition and earlier operation. If then, we are to assume, as we must, that the state's interest in the public health should embrace every reasonable measure which promises to add to the length of life, what more effective service can be rendered in respect to cancer than to offer this means of promoting early and certain diagnosis. This theory has already gone over into practice in North Dakota, where the state hygienic laboratory is compelled by law to make examinations of suspected cancerous tissue free of charge. The pioneer English campaign, started in Portsmouth at the suggestion of Dr. Charles P. Childe, makes the provision of laboratory examination by the public health department one of the chief items in its program. One of the oldest American cancer research institutions, namely the New York State Institute for the Study of Malignant Disease, has recently undertaken to make examinations at its Buffalo laboratory of specimens of tissue sent from any part of the state. To overcome the disadvantage of distance, the state health department at Albany is preparing to offer like facilities and a similar step is favorably regarded by the New York City Department of Health. One would think that least of all in New York City with its many hospitals and private laboratories there would be occasion for a public service of this kind. Yet it is believed that there is a distinct need of more general recourse to microscopic examination to supplement clinical findings, especially in the smaller hospitals and in private practice. If such are the conditions and needs in New York do they not exist

in even greater degree in the great Western and Southern States? With many comparatively small communities scattered over great areas, is it not true that it is hard enough to build and operate local hospitals without considering the additional burden of adequate pathological equipment? Is there not need for recourse to some central agency in the larger cities which will provide the necessary service? A recent example is at hand even in one of the New England States, where the director of a well known cancer laboratory taking part in a series of educational meetings and clinics, offered to examine specimens of tissue sent to him from the rural districts. Within a short time after his return he received and examined a large number of specimens and was thus able in several instances to render definite service in the recogniton of carcinoma. Is it not appropriate then, for the public authorities to consider the advisability of offering laboratory facilities for the diagnosis of this disease? It is true that microscopical examination of suspected cancerous tissue is a procedure involving great responsibility and calling, perhaps, for a higher grade of skilled technique than is necessary in the routine examinations for the common infectious diseases. There must be no question as to the competence of those placed in charge of the work. In this respect, however, the experience of Savannah, Georgia, proves that it is possible for even a moderate sized city to obtain by civil service methods a thoroughly competent pathologist. The same can be said of Florida, North Dakota, New York and many other states. If the examination of cancer tissue is carried out under the supervision of public health laboratory men of this stamp there is no need of anticipating any difficulty.

Public laboratory service in cancer seems desirable for several reasons. In the first place it will be of direct utility to practitioners and patients who do not now easily obtain the benefit of such facilities. Besides very definitely increasing the prospect of early diagnosis and treatment, it will protect the public from the danger of unnecessary operation. Possibly an incidental danger of the widespread educational campaign is that it may bring a certain number of patients to their physicians in a state of apprehension and over-readiness to have suspicious growths removed. Adequate laboratory control, as can readily be seen, will assist the surgeon and the patient both in determining promptly whether a local or a radical operation should be performed and will tend to prevent any unnecessary removal of benign growths.

Such a public service will also have an important effect in improving statistics. The medical attendant will be able to make more accurate certification of deaths from cancer than is now to be expected. In the case of diphtheria and the common infections, laboratory service has always been offered at the price of full and accurate reports of cases for administrative and statistical purposes. In this manner the public has received a benefit quite commensurate with the expense of maintaining laboratories. No less in cancer, certainly in the statistical if not in the administrative aspect, will the public gain by furnishing the means of greater accuracy in diagnosis and certification. In short, it can be justly argued that the microscopic examination of tissue removed in doubtful cases is a legitimate public expense and that it is expedient and for the public interest that state and city boards of health or other suitable agencies should offer such service under suitable safeguards.

III

The role of state health departments and state registration offices in the improvement of cancer statistics is of the greatest importance. In fact, aside from the much-to-be-desired co-operation of practicing physicians, progress in this direction depends entirely upon local registration officials, since the work of the Federal Census Bureau for the most part merely collects and reflects what has already been done by the state offices. There is no need to dwell upon the necessity of improving American vital statistics. In too many states hardly a beginning has been made, and even in the oldest registration states there is room for improvement. With respect to cancer, many critics indulge in a sweeping rejection of all American data as absolutely worthless, owing to the general defects of our system of registration. The distinguished ex-Director of the Imperial Cancer Re-

search Fund stated a few years ago that he could draw from the mortality reports safer deductions as to the prevalence of cancer in Ceylon than in New York. Fortunately we are in the way of progress not only in general, but in this particular field. Through the responsive interest of the late Director of the Census, Hon. William J. Harris, and his successor, Hon. Sam. L. Rogers, both Southerners, by the way, a remarkable advance is promised in the completeness and accuracy of statistics of cancer mortality in the United States registration area. At the suggestion of the American Society for the Control of Cancer and of leading individual students of this problem, the Census Bureau has undertaken the preparation of a special report on the cancer mortality of 1914. The essential advances contemplated by this report are in the direction of greater detail and greater accuracy. The foremost students of malignant disease have long been urging the surpassing importance of statistics showing the prevalence of cancer as it affects each organ. In the regular reports of the Census Bureau such figures are not available, since the returns of cancer deaths are classified under the seven group headings of the International List of Causes of Death. Since 1909, the Registrar-General of England and Wales has reported and analyzed the cancer mortality in great detail according to some thirty organs and parts. The special report of the Census Bureau now in preparation will for the first time give cancer deaths in corresponding detail, under twenty-nine titles similar to those used in the English reports. In the second place the American will outdistance the English report in undertaking a complete separation of statistics of cancer, in which the diagnosis was confirmed by autopsy, microscopical examination or surgical intervention from those in which the diagnosis was based merely upon clinical findings. To obtain the required detailed information for this report the Census Bureau has corresponded directly with over 35,000 American physicians and surgeons and many of you who are in active practice are doubtless familiar with the Director's letter of inquiry. The report, as thus planned, will show the number of deaths occurring according to age, race, sex and marital condition, with more completeness than hitherto, and for the registration area, the registration states, each registration state separately, and all the more important subdivisions. Although the report will constitute a special monograph applying only to the year 1914, many essential features of the improved registration of cancer will be continued, and it is reasonable to hope that a beginning has been made in raising American statistics of this disease nearer to the European standards.

In order to insure greater accuracy and completeness of the statistics not only of cancer but of other diseases, an effort is now being made to introduce a specific improvement in the registration machinery. It is expected that a committee of the American Public Health Association will shortly present to the Director of the Census a recommendation looking toward the appointment of the appropriate officials in the several states as collaborating agents of the Census Bureau with power to use the authority and franking privilege of the Federal Government in sending out prompt and uniform query letters to obtain the further details which are so often needed to complete certificates of death. The operation of this plan should bring about uniformity and greater certainty in this procedure and thereby result in better statistics. The necessary details could be asked for by the state office much sooner than by the Washington authorities and within a comparatively short time after the death of the patient while the details of the case are fresh in the mind of the medical attendant. A complete and correct transcript could then be forwarded promptly to Washington and there would be no need of further query letters from the Federal Bureau. Like so many other things, this plan seems entirely desirable, but there are precedents to establish and possibly obstacles to overcome before it can be put into operation. It is greatly to be desired that state officials will co-operate so far as lies in their power in securing the adoption and insuring the future success of this measure of state and Federal co-operation.

All the labor and expense involved in these projects for the improvement of statistics is justified, if we are to assume that

the public desires an earnest and thorough-going scientific effort to discover the cause and the cure of cancer. People do not as a rule become enthusiastic about statistics and it is easy to overlook the great importance of statistical investigation in advancing our knowledge of this disease. The public is apt to take more interest in experiments on mice, rabbits, chickens and fish than in the laborious collection and study of the records of cancer deaths. Newspaper editors, for instance, find space even in war time to chronicle the fact that 87,253 animals, 21,746 of which were mice, were killed in England and Scotland in the course of cancer investigations in 1914. Yet in Great Britain, if anywhere, the value of statistical research is appreciated and money freely spent for it. Upon the foundation of the Imperial Cancer Research Fund, a dozen years ago, one of the first undertakings was the organization of a thorough-going statistical inquiry with representatives in all parts of Europe and Asia. Today there is perhaps no more significant and clearly established conclusion than the understanding that malignancy is closely associated with chronic irritation. This knowledge is indeed becoming commonplace among even those who have only elementary ideas of the disease. How many realize, though, that this very important and positive advance is chiefly the result of the statistical investigations of the Imperial Research Fund? These observations of chronic irritants are now so often quoted that they seem sadly overworked—kangri-basket in Kashmir, betel-nut chewing, chimney-sweeps' cancer, cancer of the harnessed horn in the cattle of India, etc. Best of all, perhaps, is the observation that cancer of the stomach is frequent in China among the men who eat hot rice, while occurring far less commonly among the women who get their rice cold at a "second table." These well-known and really valuable observations owe their prominence chiefly to the reports of the English students. They have been aptly characterized by Dr. Bashford as natural experiments wherein peoples of varying racial climatic and dietetic environment unconsciously subject themselves to observation and comparison with the European standard or "control" with respect to the specific incidence of malignant disease.

The immediate problems calling for statistical study by American health departments were concisely stated by Dr. F. C. Wood, Director of the George Crocker Research Fund of Columbia University, in a paper recently read before the American Public Health Association in September at Rochester, N. Y., and not yet published. Dr. Wood points to the need of beginning at once the collection of extensive data in order that the material may be ready for final study ten or twenty years hence. Statistics of deaths in hospitals are of little value because they do not as a rule accurately represent the normal population of the district in which the institution is situated. A prominent surgeon, skilled for instance in operations upon cancer of the breast, will naturally attract to his hospital an unusually large number of cases of that kind, thus invalidating general conclusions from the records of that institution as to the relative prevalence of that form of the disease. More representative investigations are needed and state health departments should take up the work.

One of the first needs is for accurate statistics of the incidence of cancer by counties, as well as by states, in order that it may be ascertained whether climate, soil, moisture, drainage, etc., produce a demonstrable effect on the occurrence of the disease, and therefore stand in a definite relation to its cause. Perhaps in no other field have statistics been subjected to greater abuse than in the effort to prove that cancer states, cancer districts and cancer houses exist, and therefore that the disease is infectious. Some of these arguments exhibit the most elementary fallacies. In the "chamber of horrors" of the Imperial Cancer Research Fund in London is a colored map gotten up by an amateur cancer association which purports to show the relative prevalence of cancer in the several counties of England. It is said that this alleged study was made simply by taking an ordinance map and applying the crude death rates of the several counties as shown in the report of the Registrar-General. On a map produced by similar methods in this country, Vermont would be black and Kentucky white. Almost

everybody knows that cancer is a disease of adult life and that in regions where there is a predominance of old people, the younger generation having migrated to the cities, there is bound to be a higher cancer death rate. Such maps and such comparisons are therefore totally misleading and unreliable. Until correction for age distribution is applied we have no right even to begin to think of other possible causes for a higher cancer death rate in one district than in another. And of course it is evident that to make such corrections we must have accurate census information as to the population, and its age and sex constitution in the districts compared. In too many states such data is entirely lacking.

The comparison of cancer incidence on different races is a line of investigation that must be carried very much further. Here it rests upon the Southern states with their Negro population and upon the Western states containing what is left of the Indian race, to furnish the American data required. To ascertain whether there is any actual increase in these racial groups it is necessary to compare the general incidence in Negroes and Indians with that of the white race, and above all to compare the special incidence on particular organs of the body in the different races.

Finally, it is of true scientific importance that we have a final and convincing answer to the question whether cancer is increasing or not. Aside from the popular interest in the matter there is the possibility that further light may thus be thrown upon the etiology of the disease. Only if it is established that cancer is really increasing can the argument be maintained that modern conditions of civilization, diet, urban life, etc., have anything to do with the disease. If the increase is real and continuing, redoubled emphasis is placed upon the need of public education looking toward the more frequent surgical removal or medical treatment of chronic skin lesions, ulcers and other conditions which accumulating experience proves to be the precursors of cancer. But strong as is the presumption that the disease is really increasing, it seems difficult under present conditions to produce statistical evidence that is immune to attack. Only the improvement of mortality records by reinforcement with microscopical examinations and a higher percentage of routine autopsies can answer this question in a way to convince all doubters. The extension of microscopic research and the improvement of statistical methods here again run together to the same purpose. A study of London hospital records shows that autopsies increased the number of final diagnosis of cancer by 30%. One of the foremost American students holds that if these procedures could be thoroughly adopted and the varieties of tumors thereby determined and registered, many of the questions now insoluble would be answered in a couple of decades and we should know not only whether cancer on the whole is increasing but whether one variety or another is becoming more frequent and whether the incidence on each particular organ is changing.

The problems of heredity, the effect of occupation and chronic irritation, the relation between cancer and syphilis and many similar and important lines of research depend entirely upon the improvement of statistical methods and sources. It is not necessary here to discuss any more of these special problems in detail. Sufficient has been said, it may be hoped, to point out the opportunity and the duty of American public health officials to contribute a great and necessary share of the manifold effort which must still be made. In their statistical work, in their diagnosis laboratories, and in their efforts to organize and direct the instruction of the people in matters of health will be found appropriate opportunities to render splendid service in the age-long and still continuing war against cancer.

DISCUSSION.

Dr. J. C. Bloodgood, Baltimore, Md.—I appreciate this privilege of talking to the public health officers of the Southern States. I have read Mr. Lakeman's paper, and I am also familiar with the work he has been doing, as we have talked over the subject a great deal, and I want to discuss the problem simply from the standpoint of public health. I do not know whether I know anything about it, but I am going to give you my point of view, which is the point of view of a surgeon who for twenty-five years has been attempting in every way to ascertain the results

that we are getting in the surgical treatment of cancer.

I may preface my remarks by telling you something about that, because to a certain extent I have a public health department in my department. That department is now called the "Ultimate Results Department." It is financed entirely by friends and patients. The first object was to get at the results of our surgical treatment in the last few years, in addition to attempting to find out the results of this educational propaganda in regard to cancer.

The figures show in every region where cancer is situated, and if we take the figures up to 1908, a period of eighteen years, and compare them with the next two years, 1910, just two years as compared to eighteen, these two years represent the beginning of the propaganda of education. We find in every group of cancer that the percentage of early cancer has increased, and that the percentage of inoperable cases has decreased. When we compare the figures between 1913 and 1915, we find for six months of any one of these two later years we have accomplished more than in the two years previous. This educational propaganda in the last two years as compared with 1908 to 1913, a period of five years, is as six to two years, so that there seems to be no question that something has happened. There we have the records up to 1908, a period of 18 years, with a very gradual, hardly perceptible improvement. Then in the next five years, 1908 to 1913, after the educational propaganda, a distinct improvement, more improvement in the five years than the previous eighteen years and more in the last two years than in the previous five.

These figures demonstrate that the educational propaganda, whatever it is, has accomplished results. The question is can we explain these results? Of course, the educational propaganda in the beginning was what the surgeon told his patient and the general practitioner who brought the patient. We take the practitioners who come in contact with us personally in regard to cancer and we educate the patient, and as Dr. Freeman has said, we have educated our own students.

The great trouble is, so many of our own students have not gone into the subject so thoroughly as they might. There is a demand in the scientific laboratory for men and a large number of men have gone into the Public Health Service. But this is what I know in the last two years on account of having more money and therefore more help.

We have a card index of every doctor, and every patient sent by every doctor, in the last twenty-five years. We take all of the breast cases of Dr. Smith, all his lip cases, and his stomach cases, etc. When Dr. Smith formerly sent us breast tumors they were generally inoperable, but now they are always operable, and generally curable. I think it is going to take a year or two to get out these things because the money I have under my control is limited. If some man would give $10,000.00 I would get out the work in six weeks. The work is done by students who have a knowledge of medicine.

Every individual case is noted that comes under our observation and we find out why they came. Did they come because the doctor advised them, or did they come because some friend advised them, or did they come because they read something in a newspaper or magazine? The point is that different things brought them. Unfortunately, at the present time, the thing that brings them to us now is not the doctor; it is not the fault of the doctor, because they have something they would never ask their family physician about. A patient, as a rule, is just as apt to neglect going to the family physician as he is to the surgeon. These things that have influenced the public most, as far as I can make out in regard to cancer from my own figures, are what they have read and perhaps more what they have heard in public addresses.

Now, we come to the chief thing in Mr. Lakeman's paper. Through what agency in this country can the propaganda of cancer be best and most quickly attained? I know the public health officers have enough to do, and I know they have not got enough money to do what they have to do, but I feel I am not speaking in this way from a psychological standpoint, nor to flatter you in getting you to do it, but I feel that as we emphasize before the public the importance of the Public Health Department of the Government and the public health departments of the state, city and county, the more we emphasize as a profession that we need their help, the less difficulty will they have in getting money to do their work. I may be wrong in that, but whether I am right or wrong, I still think I am right, the public health departments of this country are the best means for the propaganda of education. There may be other methods, but how can you help? What we want you to do is to help us in this work, as we will never know from any surgical clinic the results of the early treatment of cancer. We may report from Baltimore that our percentage of cure of cancer of the breast is increasing from 35 to 42 or to 52 and 60%, and so on. That does not prove it. The great proof that surgery, or whatever method may happen to be the treatment of cancer, has done some good is when the public health statistics show that cancer is on the decrease. If in 1910 we had the absolute figures that there were 10,000 deaths from cancer of the breast and in 1912 there were only 400 deaths from cancer of the breast, something has happened. We do not care what has happened, but something has happened. From now on, if the health departments throughout the country can be aided by funds to have a department which will keep their vital statistics in such a perfect form that from year to year we can check the results on cancer, great good will be accomplished.

The literature that we wish to reach the public on cancer can be sent through the public health departments. The moment a doctor sends in a death from cancer, on the ordinary blank report, you can send him another blank which he will fill out in detail, with a leaflet for the doctor in regard to the type of cancer, whether of the breast or uterus, and one or two more to go to the family because the family, when they have a case of cancer in their midst, will read the literature on cancer with an entirely different mental attitude, and the doctor who has written a death certificate for cancer is in a much better receptive attitude for education.

In the second place, the public health officials throughout the country are not in practice.

Dr. Williams: Many of them are not.

Dr. Bloodgood: Ultimately none will be. Therefore, if the member of a public health department of a city, county or state makes addresses on cancer he can not be criticised on the ground he is advertising to get patients. I wish all of you who are now speaking on cancer were on salaries. But the public health man undoubtedly will be one of the most important factors for making public addresses on cancer. There it is in a nutshell.

There is only one other suggestion that is most interesting, and that is, to ask doctors in writing a death certificate to put down, in addition to the cause of death, whether this patient had ever been operated upon for cancer, and whether there was evidence he had been cured of cancer. We have no such records at the present time. Here, for instance, is a woman operated upon for cancer of the breast twenty years ago and dies in a county in Virginia of some heart disease. We would like to have a record of that. The fact is you can find out easily from the doctor and family where she was operated upon; and you can communicate with the hospital where she was operated upon and complete your record. It would be a splendid thing to do that. It is a question, gentlemen, of dollars and cents, and I never was able to do this until I got money with which to do it, and am not able now to do it on so large a scale as I should like.

A classmate or colleague of Dr. Freeman in Wisconsin sent out letters in regard to a survey of cancer, received 20% replies, was discouraged, and gave it up. As a matter of fact, Dr. Freeman said he was lucky. I tell you this: I have been writing doctors for over twenty years, and the doctors who do not answer my letters, as a rule, are my own colleagues in my own town. They think they will see me the next day. The doctors who answer letters best and first are the men in the small places.

I would like to make one other statement: We have written to every case in the hospital of which we have a record, in twenty-five years, operated upon for gall stones or for some trouble with the gall bladder. Sixty per cent of the replies were put in charge of the lost and found department, and after a year's work the percentage of replies was 96. We know the result in 96% of the cases operated upon for gall stones.

What can we say of the ultimate results? Not a single patient whose gall bladder has been drained, whether there were stones or not, has died of cancer of the gall bladder. Proper drainage of the gall bladder is just as good for cancer as the removal of the gall bladder. What we are doing in the Surgical Pathological Laboratory of the Johns Hopkins Hospital in relation to ultimate results can be done and should be done in the public health departments of this country, providing they can get the money with which to do it; and the machinery that you need for that work is the machinery that you need for this work. I believe it can be made uniform and standardized, and I would like to see the Southern Medical Association appoint a committee to investigate and study some method, so that when you do start you will have a uniform method of doing it. As it is now, the different health departments throughout the country are doing different things. It is time to standardize it. It will make it more thorough and more economical.

Dr. Allen W. Freeman, U. S. P. H. S., Washington, D. C.—I would like to say a few words upon this subject. I have been tremendously interested in the work that Dr. Bloodgood has been doing in his laboratory for many years in following up cases. Quite a while ago when I went back to Virginia and into public health work, I saw Dr. Bloodgood several times and talked with him about the cancer problem. And then I met Dr. Cullen one night on a south-bound train, and as a result of a little conference we had, Virginia got out the first cancer bulletin ever issued by an Eastern state. Michigan, I believe, beat us by a few months. We did not know about it at the time.

That bulletin had considerable effect. It attracted considerable attention from newspapers and the laity, but largely failed in its purpose because of the fact that instead of writing it ourselves we had it written by a surgeon. I hold no case against the surgeon, however, but it is a fact, and any one who has had any experience with public health education recognizes it, that material to be digested by the ordinary public has to be recast and written in non-technical language. The man who wrote that bulletin was a good surgeon and an excellent writer, and I did not have the nerve to recast the article when it came in. But articles upon cancer must be written and issued on the same basis as literature on typhoid fever and hookworm disease. We must keep away from the surgical standpoint.

As to the question of vital statistics, we are accumulating an enormous amount of material. The Census Bureau will publish a certain amount of this in a special bulletin, but there is locked up in the registration office of all states which have registration, an enormous mass of valuable material which the rather limited facilities of the Census Bureau does not permit to be digested and gotten out. It is an entirely practicable procedure, as Dr. Bloodgood has pointed out, to have every certificate of death from cancer which comes into any state registration officer followed by a letter to the doctor, and to get just the amount of information you want in regard to the case.

As to getting circular letters from doctors, we have the same experience as every one else, and that is, when you start circularizing you hit the waste basket in the center. If you get 20% of replies from the first letter, you are lucky. If you get 20 or 30% more from the second, and keep after them you can get nearly all to give any kind of statistical information you want. Most of the men are careless, and they do not pay any attention to what you write them until you let them know you will not let up on them. Cancer is one of the pressing problems of public health today. When we consider the death rate from cancer, from heart disease, and from Bright's disease, we realize what an enormous task we have before us.

Dr. Bloodgood has given us some encouragement in saying that notwithstanding the fact that cancer is increasing, we are making a dent in the popular mind, and that people are seeking aid sooner.

His remarks with reference to taking the educational propaganda over as a part of the regu-

lar public health movement are very pertinent. Surgeons who have taken up this work at their own expense have been severely criticised by some people who should have known better. It is a legitimate field for exercise of Government authority and expenditure of Government funds. Whether it be the government of the state or city we should take it up as a part of our regular work just as other recognized phases of public health activity.

Dr. L. B. McBrayer, Sanatorium, N. C.—I notice Dr. Bloodgood deals in percentages of operable and inoperable cases now and a number of years ago, showing that he gets very much fewer inoperable cases than he did in the days gone by; and urges from these statistics that the doctors are diagnosing the cases very much earlier. Might it not be that the doctor's ability as a surgeon has something to do with the fewer inoperable cases found?

Dr. John L. Davis, Waco, Tex.—I suppose I look upon this subject of cancer from a different viewpoint than the ordinary physician or surgeon, because almost all my life I have been connected with life insurance work; and we look at it somewhat from a financial standpoint besides the humanitarian view that every physician takes. Unfortunately, experience among insured lives shows that cancer has almost doubled in its mortality in the last twenty years, so that at middle age the mortality from cancer is about 6% of the total mortality.

I am very much pleased to know that Dr. Bloodgood sees a ray of hope in bringing this mortality down, because everything that I have read shows that cancer has increased, and this is almost the first view of the percentage going the other way. Anything that will go to help us financially will help us also in a humanitarian and broader sense. We appreciate what the surgeons are doing. I think our only hope, our greatest hope, is to educate the people as well as to educate the profession. All insurance companies are doing that to a greater or less extent, and we are endeavoring to conserve the health of people through our educational methods, and anything we can do in that way is going to prolong life, and particularly if we can induce people to go to their physicians for periodical examinations, so that their first symptoms of cancer and diseases of that kind requiring early treatment can be noted. I am sure the mortality can be very materially improved through the early knowledge of such conditions as cancer.

Dr. Joseph C. Bloodgood, Baltimore, Md. (closing.)—In answer to the question of Dr. McBrayer, I will say that I used the words inoperable and operable in early cases to save time. We have divided them into the following groups: Benign lesions, no treatment, that is, cases that simulate perhaps pre-cancerous lesions, which get well without any operation. For instance, you will notice that I have a fever blister on my lip. Up to two years ago nobody would worry over a fever blister. Ninety-nine fever blisters would get well and the other one might prove to be a cancer. If this fever blister on my lip is going to be a cancer I will have it cut out at the end of a few weeks if it is not going to heal. This education is bringing all surgeons great dilemmas.

Let me first divide the benign lesions, no operation. Benign lesions, operation confirmed by the microscope. We can not claim cures for cancer in them. Early cancers, late but operable cancers, and inoperable cancers. Four groups in our records are increasing in number; one group inoperable, decreasing in number. You can not get away from that. Surgery is just the same. Let us take the same thing in the breast where it is positive. Inoperable cancer of the breast in our clinic is on the decrease. It used to be about 42%; it is now about 18%,—entirely too high. Fully developed cancer, such as scirrhous and medullary cancer, with areas of adenocarcinoma, is on the increase. Adenocarcinoma is on the increase. As to adenoma, the pathologists disagree as to whether it is cancer or not, but it is on the increase. Benign tumors of the breast have increased from 35 to almost 60%. Conditions of the breast that we do not operate upon,—pain, discharge of blood from the nipple, multiple areas of induration,—are on the increase. Surgery has not changed at all. Dr. Halsted's operation on the breast today is the same as he did it twenty-five years ago. Why, then, have our cures increased from 35 to 42% in cancer if nobody will disagree that it is cancer? There is only one other factor, the cases are seen earlier, and if you put them in groups you will find them earlier. There is no question about this occurring in every locality. If we can accomplish what I have told you in Baltimore, you can accomplish it everywhere.

I leave you to read Mr. Lakeman's paper. The American Society for the Control of Cancer can do nothing unless it has avenues through which it can work. The American Society for the Control of Cancer has been pushing behind the backs of the people who have got to do the work. Even if the American Society for the Control of Cancer had a million dollars it could not do the work without the help of other agencies, and the question is what is the best agency through which it can work? I believe it is the duty of the health service, and I think literature must go to people who will appreciate it. It must be good literature. We must furnish the people literature upon which we agree, and we should not say anything to the public about the things upon which we disagree. You must have public health meetings in your localities throughout the country twice a year, and the publicity of these meetings must be under the control of a committee. I think we should try to eliminate publicity through the individual. For instance, a reporter came to me today and wanted an abstract of my two papers. I told him to go to the Publicity Committee and the Publicity Committee sent him back to me. That is a great mistake. In meetings of this kind everything that gets into a newspaper should come through the Publicity Committee, so that what we get in the newspapers is what we agree on and behind which we have the authority of the country. What happened in New York? When we had our first meeting there of the American Society for the Control of Cancer, what was the heading? "Experts Disagree as to Cancer." That was a great help to the beginning of the propaganda, was it not?

SURGERY, GYNECOLOGY, OBSTETRICS AND GENITO-URINARY DISEASES

THE SYMPTOMS AND SURGICAL TREATMENT OF CERTAIN CONDITIONS PRODUCED BY THE PRESENCE OF ADVENTITIOUS BANDS AND MEMBRANES WITHIN THE ABDOMINAL CAVITY, WITH REPORT OF TEN CASES.*

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The recognition of the presence of adventitious bands and membranes within the abdominal cavity is not new. Such structures were described many years ago by Virchow; and more recently Jonnesco described a "parietocolic fold" and Treves a "bloodless fold." Similar structures have also been described by Reed, Juvara and others, but it was not until the writings of Lane and Jackson appeared that any great interest was taken in the matter. Besides these, many others have contributed to our knowledge of the subject, notably Binnie, Martin, Mayo, Coffey, Bainbridge, Pilcher, Frazier and Gerster. The membranes and bands and the effect produced thereby have been variously described under such titles as "Chronic Constipation and Its Surgical Treatment" (Lane), "Pericolitis Dextra" (Binnie), "Membraneous Pericolitis" (Jackson), "Cecum Mobile" (Wilms), "Chronic Intestinal Stasis" (Lane), "Intestinal Obstruction Due to Kinks and Adhesions of the Terminal Ileum" (Mayo), "Gastro-Intestinal Stasis" (Coffey), "Pericolic Membranes and Lane's Kink" (Williams), etc.; and under these terms the various writers have described identical or very similar conditions.

Whether we accept the evolutionary theory of Lane, the congenital theory of Reed or Eastman, or the inflammatory theory of Pilcher, Gerster and others, there is no question that adventitious bands and membranes are of very frequent occurrence, and in many instances produce serious consequences. Of the conditions brought about by the presence of these bands and membranes, by far the commoner and more important are:

1. The ileal or Lane's kink, produced by a band which extends from the right iliac fossa across the under surface of the ileal mesentery and is attached to the wall of the ileum within a few inches of the ileocecal valve.

2. Kinks and angulations of the terminal ileum produced by adherent appendices,—an appendix adherent to the under surface of the ileal mesentery causes a condition very similar to Lane's kink. Gross inflammatory adhesions may produce various angulations and kinkings of the terminal ileum and obstruction of a greater or lesser degree.

3. Angulation at the hepatic flexure and obstruction of the ascending colon by a pericolic or Jackson's membrane, which membrane extends from the parietal peritoneum to the outer side of the ascending colon, covers this structure and the hepatic flexure and loses itself in the wall of the gut near its internal longitudinal band. This structure contains fine blood vessels and connective tissue fibres. One or more of these bands may directly compress the gut, causing partial obstruction, or the membrane may angulate and kink the hepatic flexure, either by abnormally fixing this point, or by binding together the ascending and the beginning of the transverse colon.

4. A dilated and mobile cecum, by becoming prolapsed into the pelvis, will exaggerate any existing kink or obstruction at either the hepatic flexure or in the region of the ileocecal valve, and is in itself the cause of stagnation of the intestinal contents.

5. Angulation and obstruction at the hepatic flexure by a membrane which binds together the ascending colon and the first portion of the transverse colon.

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Such a membrane or adhesion is distinct from Jackson's membrane.

6. Marked prolapse of the transverse colon may in itself produce angulation and obstruction at the hepatic flexure and will exaggerate the obstruction produced by any co-existing membrane.

It may be noted that gastroptosis with pyloric obstruction or a generalized intestinal prolapse have not been mentioned, as these conditions are considered as distinct and separate from those produced by the presence of adventitious membranes and bands.

The symptoms produced by one or a combination of the conditions above outlined are those of chronic obstruction with intestinal auto-intoxication and may be enumerated as follows:

1. Apathy, loss of energy, easy fatigue, headache, backache, pain in the muscles and a general feeling of ill being.

2. Discoloration of the skin which becomes sallow or muddy and occasionally spotted, dark rings appear beneath the eyes.

3. Coldness and claminess of hands and feet.

4. A foul breath, loss of appetite and very commonly a loss in weight.

5. Symptoms suggestive of neurasthenia.

6. Attacks of abdominal pain which are usually referred to the right side of the abdomen, not uncommonly to the region of the appendix. Such attacks may be preceded or followed by vomiting and may or may not be associated with taking of food.

7. Local tenderness which is confined to the region of the band or kink producing the obstruction. Thus tenderness in the right iliac region would suggest the presence of a Lane's kink or other obstructive factor in the region of the ileocecal valve, and tenderness over the hepatic flexure would indicate obstruction in that locality.

8. A sensation of distension by gas commonly confined to the right side of the abdomen. Not infrequently the distended cecum can be plainly outlined.

9. Constipation which is present in a great majority of the cases and is usually marked. Constipation often precedes the attacks of pain by many months and not infrequently it alternates with mucous diarrhea.

10. Bismuth radiographs are of the greatest value in clearing up the diagnosis. Normally the stomach should empty itself of the bismuth meal in about six hours, in about nine hours the bismuth should have passed the ileocecal valve, and in from twelve to eighteen hours the greater part of the bismuth should have passed the hepatic flexure. Marked departures from these figures tend to indicate obstruction. Frequently the kink or angulation can be plainly made out in the radiograph.

In any given case either the obstructive or toxic symptoms may predominate the one almost to the exclusion of the other, or symptoms of both obstruction and intoxication may be present and well marked. In two of our cases symptoms of acute and absolute obstruction developed, requiring immediate operation. These cases are given in full under case reports.

The symptoms of a case of average severity are somewhat as follows: The patient gives a history of constipation extending over a period of months or years, of attacks of abdominal pain usually referred to the right side, not uncommonly to the region of the appendix, and perhaps of attacks of vomiting. He will tell you that he feels loggy and heavy and that he tires easily and that he has no "ambition." Upon examination it will be found that he has a sallow complexion, that his hands are sweaty and cold and that his breath is offensive. Abdominal palpation will reveal a point of tenderness in the region of the appendix, usually somewhat lower down than the ordinary location of appendix tenderness or an area of maximum tenderness may be felt over the hepatic flexure. Very frequently a distended cecum and ascending colon can be distinctly palpated. Given such symptoms a diagnosis of intestinal obstruction and stasis produced by either an ileal kink, an adherent appendix, a pericolic membrane or a mobile cecum is almost unavoidable. Not infrequently a case will present itself whose chief symptoms are frequent attacks of vomiting, occasionally occurring after every meal. In such a case the tenderness is apt to be most marked over the appendix region, and at operation a well-devel-

oped Lane's kink produced by a broad, thick ileo-pelvic band will frequently be found to be the cause of the trouble. In several such cases the division of the band and plastic repair of the peritoneal defect completely and permanently cured the condition.

TREATMENT.

It is unquestionably true that much may be accomplished in certain cases of obstruction and stasis produced by one or more of the conditions above described by prolonged rest in bed, the administration of liquid petrolatum, forced feeding to increase the fat and thus give support to the prolapsed viscera (Jones' method) and by wearing supporting belts or mechanical spring supports to accomplish the same purpose. Such methods apply especially to women with relaxed abdominal walls. However, in cases such as those upon which this report is based, that is, more or less vigorous males between the ages of 20 and 45 years, such methods have little value. In these cases the abdominal wall is firm and muscular and any abdominal support can accomplish little or nothing. In such cases, operation offers the only hope of cure. We have employed the following operative procedures in all such cases with the greatest benefit.

In cases of obstruction produced by Lane's kink, the band causing the kink is divided transversely and the peritoneal defect thus produced is sutured at right angles to the line of division of the band. In some cases extensive undermining of the peritoneum is necessary to cover in the defect caused by a complete division of the band. It is extraordinary what a degree of angulation, kinking and obstruction can be completely relieved by this procedure.

In those cases of obstruction produced by an adherent appendix, the removal of the appendix will relieve the obstruction. In cases of obstruction by inflammatory adhesions, all such adhesions must be carefully separated, all peritoneal defects carefully covered and suture lines or any raw surfaces smeared with sterile vaseline.

A Jackson's membrane causing obstruction is divided to such an extent as is necessary to completely relieve the obstruction, especial attention being given to the fibrous bands. Raw edges or any defects should be liberally smeared with sterile vaseline.

In cases of obstruction and stasis from a prolapsed and mobile cecum, this structure is to be fastened into its normal position by uniting its external longitudinal band to the parietal peritoneum along the line of meeting of the lateral and posterior abdominal walls by a number of interrupted linen sutures. In those cases in which the cecum is markedly dilated, its size is to be reduced by plication after the manner of Blake,—that is by uniting the anterior and external longitudinal bands by means of a continuous linen suture. The cecum is then fastened into its normal position in the manner above described. It will be found that after fixing the cecum in this way it still has a slight range of mobility as if provided with a newly-formed mesentery.

Frequently the mobile and dilated cecum is associated with a pericolic membrane causing obstruction at the hepatic flexure and occasionally with an ileal kink as well, both of which conditions have also to be corrected.

In those cases in which a prolapsed transverse colon is believed to be the cause of the obstruction at the hepatic flexure, this structure may be lifted up and supported by uniting the great omentum transversely to the anterior abdominal wall above the umbilicus by a series of sutures as suggested by Coffey. It is well to add to this procedure a plication of the gastro-colic omentum. In three cases we have combined this method with the division of a pericolic membrane at the hepatic flexure with satisfactory results.

It may be noted that the operations of short circuiting and colectomy have not been mentioned in the above discussion. During the past three years we have operated upon 42 cases of chronic intestinal stasis due to one or more of the conditions above described, and in no case did either of these radical measures seem indicated. We have been able to trace a number of these cases for periods of one to two years or longer and in a very large percentage of them the results have been excellent and the cure apparently permanent. In most cases the results are very striking.

CASE REPORTS.

Case I.—W. I. I., age 22 years. Admitted January 21, 1915. Chief complaints: headache, pain in right iliac region, constipation and malaise.

Two years and nine months ago appendectomy for acute appendicitis. Constipation for a year or more, steadily growing worse, feels dull and heavy all the time, attack of right iliac pain four months ago and a second about two days ago.

On admission, of poor physique with sallow, muddy complexion.

On examination, there is rather marked tenderness over the appendix region and scar of former operation. Nine-hour bismuth radiograph shows marked ileal stasis with puddling.

February 16th. Operation.

Findings: Omentum adherent to caput coli and parietal peritoneum of the right iliac fossa, and a well marked ileal kink causing obstruction (the appendix had been removed). Adhesions separated and raw surfaces whipped over. The ileo-pelvic band divided transversely and the rent sutured longitudinally, thus entirely doing away with the obstruction.

The patient made an uneventful recovery from the operation. He was kept under observation until May 16, at which time he had gained 15 pounds; his bowels moved daily, and his general appearance was greatly improved.

Case II.—H. M., age 24 years. Admitted January 27, 1915. History of an attack of right iliac pain without nausea and vomiting about one and a half years ago, since which time he has been somewhat constipated. About two weeks ago felt pain in right iliac region, which has developed into a dull ache. Examination shows rather marked tenderness over the region of the appendix.

Bismuth radiograph shows marked nine-hour ileal stasis with puddling.

February 16, 1915. Operation.

McBurney's incision enlarged by opening the rectus sheath. The appendix, which is thickened and indurated and adherent to under surface of ileal mesentery, is removed. From the outer border of the appendix a peritoneal membrane extended to outer surface of cecum. Rather marked kinking of ileum about two inches from ileocecal valve was corrected by the removal of the appendix.

Patient made an uneventful recovery from operation. He was last seen November 1, and his general condition was decidedly improved. Constipation was less marked, although he still has to take an occasional purgative.

Case III.—S. L., age 23 years. Admitted June 2, 1915. Chief complaints: indigestion, constipation, feeling "dopy" and having no ambition.

History of digestive disturbances for several years with pain or distress about one hour after meals. On admission is of poor physique with sallow, muddy skin.

Examination shows abdominal tenderness, decidedly most marked over the region of the appendix, and marked relaxation of the lower abdomen. The patient is of a decidedly nervous type.

Examination of the stomach contents normal. Radiograph shows nine-hour ileal stasis.

June 16, 1915. Operation.

A well marked Lane's kink corrected. An appendix, small and free and showing no signs of inflammation, removed.

Recovery from operation was uneventful. Before being allowed up a supporting belt was fitted and applied, which apparatus was constantly worn thereafter.

This patient was last seen about October 20. He had gained in weight and his complexion had become almost ruddy. He was still somewhat constipated, for which liquid petrolatum was being regularly taken. His neurasthenic symptoms had largely disappeared.

Case IV.—R. B., age 28 years. Admitted April 7, 1915. History of typhoid fever October and November, 1911; and since this time has had more or less continuous indigestion with pain and a feeling of fullness coming on two hours or more after eating, lasting several hours and relieved by food. Epigastrium is very tender. Has lost ten or fifteen pounds in weight.

On admission, a thin, wiry man of twenty-eight years. Examination negative save for a well marked tenderness in the right half of the epigastrium. Radiographs show marked ptosis of cecum and transverse colon, the caput coli being below the brim of the true pelvis, and the transverse colon well down.

May 10, 1915. Operation. Ether. Through a right paracentral incision, a very long, free and thickened appendix is removed, and an excessively mobile and ptosed cecum is secured in approximately its normal position by four sutures uniting its external longitudinal band to the posterio-lateral wall of the abdomen. The gastro-colic omentum which is very long is shortened by four sutures, plicating the stomach, this membrane and the transverse colon. The great omentum at its colonic attachment is then sutured transversely to the anterior abdominal wall above the umbilicus.

May 19, 1915. Recovery uneventful. Bowels move more regularly than before operation. June 3. Improvement uninterrupted. Bowels move regularly. June 18. Discharged. Patient feels that he has been decidedly improved by operation. Constipation is much less marked and abdominal pain and discomfort have practically disappeared. Radiographs show that the cecum and transverse colon are in normal position.

Case V.—G. A. J., age 21 years. Admitted June 19. 1915. Appendix removed 18 months ago, since which time there has been more or less constant abdominal pain and distress localized chiefly over the right side with marked constipation and occasional vomiting. For past ten days bowels have not moved and vomiting has occurred whenever food was taken.

Examination shows a sallow man of 21 years with rather marked tenderness in the right side of the abdomen and some distention. June 22. Has vomited a number of times since admission and bowels only move by repeated enemas and then in extremely small amount.

June 23. Operation. Right rectus incision, excising scar of former operation. Abdomen entirely free from inflammatory adhesions.

Findings: A well marked Lane's kink, a Jackson's membrane binding down the hepatic flexure

and causing a practically complete obstruction at this point, and an extremely large and mobile cecum. The ileo-pelvic band is divided transversely and sutured longitudinally; the Jackson's membrane is divided, freeing the flexure and relieving the obstruction; and the redundant cecum is reduced to normal size by uniting its external and anterior longitudinal bands by a continuous stitch for a distance of 3½ inches. And the cecum thus reduced is fastened to the posterio-lateral abdominal wall by three Pagenstecher sutures.

July 5. Has made an absolute, uneventful recovery; bowels have moved daily since second day after operation without purgative or enema. Patient feels greatly improved.

August 7. Has gained in weight 7 pounds; bowels move regularly, and the patient is apparently cured.

October 28. Has gained in weight and strength; color good; bowels move regularly without purgative, and the patient is cured by the operation.

It will be seen that the results in this case are very striking. At operation there was practically total obstruction from a Jackson's membrane. The patient has made a complete and absolute recovery.

Case VI.—E. M. W., age 22 years. Admitted August 24, 1915. Trouble began eight months ago with pain in right abdomen. Soon after this he became extremely constipated and would have to take a purgative every few days, after which he would feel well for a day or two, when another purgative would be required. Pain was very frequently felt immediately after eating. During this period felt drowsy and sick all the time.

On admission, a fairly well-nourished, sallow man of 22 years, complaining of constipation and right abdominal pain. Examination negative save for a moderate tenderness over the ascending colon and hepatic flexure.

Bismuth radiograph shows marked prolapse of the cecum, the caput coli being below the brim of the pelvis.

August 30. Laparotomy. Right paracentral incision. Cecum extremely movable, can be lifted out of the abdomen and across the mid-line. The appendix long and free, showing no evidence of inflammation, removed, and the cecum is fastened in its normal position by three Pagenstecher stitches inserted through the external longitudinal band and along the line of junction of the posterior and lateral abdominal walls.

September 28. The patient made an uneventful recovery and now has a daily bowel movement. His complexion has cleared and he feels strong and vigorous.

October 10. Bowels are moving regularly without purgatives; complexion has cleared markedly, and feels much stronger and more active.

October 29. Discharged well; has regained normal weight and strength, and has been cured by the operation.

Case VII.—C. G., age 26 years. Admitted September 4, 1915. Past history uneventful; bowels have always been regular, moving daily.

Present trouble: Nine days ago he became constipated and his bowels did not move for four days, when, after repeated purgatives and enemas, a free evacuation was obtained. For the past four days there has been no movement or passing of gas. For the past 48 hours there has been rather severe abdominal pain and a feeling of great depression.

On admission, examination shows slight tenderness over the ascending colon with marked tympany and slight distention in this region. Vomiting of bile (greenish fluid) occurs soon after admission. Repeated turpentine enemas fail to produce a movement or the passage of gas.

Operation about four hours after admission, under ether, right rectus incision. The cecum and ascending colon are enormously dilated and freely movable, and over the hepatic flexure and descending colon is stretched a well marked Jackson's membrane which causes constriction and obstruction of the colon just proximal to the hepatic flexure. The terminal ileum is bound down and angulated by an unusually well developed Lane's band about four inches from the ileocecal valve. The Jackson's membrane is freely divided, entirely relieving the obstruction; the Lane's band is divided transversely and sutured longitudinally; and ascending colon and cecum reduced in size by uniting the external and anterior longitudinal bands by means of a continuous suture (Blake's method); and the mobile cecum is fastened by four stitches to the angle of the lateral and posterior abdominal walls. Lavage was done before and after the operation.

September 5. Proctoclysis and repeated turpentine enema. Passed a small quantity of gas. Nothing by mouth. September 6. Very comfortable. September 7. Frequently repeated enemas have been given; bowels move well; large amount of gas expelled.

November 1. Recovery complicated with pneumonia beginning on the twelfth day. At present is convalescent. Bowels have moved regularly in spite of severe intercurrent illness.

Case VIII.—A. A. B., age 24 years. Admitted September 14, 1915. History of constipation for three years, requiring a purgative on the average of twice a week; of an attack of right iliac pain with vomiting two years ago and second similar attack one month ago.

On admission, well nourished and of good physique. Complains of constipation, headache, malaise and of feeling "doped up" all the time.

Examination shows marked tenderness below and to the inner side of McBurney's point. Bismuth radiograph shows marked nine-hour stasis in terminal coils of ileum.

September 16. Operation. Through a McBurney incision extended by opening sheath of rectus, a long, free, non-inflamed appendix removed, and an unusually well marked Lane's kink corrected by dividing the band transversely and uniting the rent logitudinally.

October 15. Discharged. Bowels move regularly once a day and the patient states that he feels better than before operation. Complexion has cleared to a very marked degree. The improvement in this case is very striking.

Case IX.—C. L. B., age 22 years. Admitted August 18, 1915. Chief complaints: Indigestion, constipation, lack of energy and disinclination for work. History of indigestion, with pain and distress after meals and constipation for the past three years. During this period has had frequent headaches and has felt weak and lifeless. The

day before admission had an attack of right iliac pain with vomiting.

September 27. Symptoms above noted have continued, and tenderness is definitely localized in the right iliac region. Bismuth radiograph shows nine-hour ileal stasis.

At operation, an appendix which is free and shows no evidence of inflammation is removed; and an unusually well marked Lane's kink is corrected by dividing the band transversely, loosening up the peritoneum and uniting the defect at right angles to the line of division of the band.

November 1. Condition shows some improvement; constipation less marked.

Case X.—T. S., age 22 years. Admitted October 6, 1915. History of frequent attacks of right iliac pain and vomiting for the past eight months and of constipation for past two months. For eight weeks or more has felt dull and listless and tired very easily.

Examination shows rather marked local tenderness in right iliac region below McBurney's point.

October 11. Abdominal section. A well marked Lane's kink causing obstruction is corrected in the maner described. An appendix showing no evidence of inflammation is removed.

November 1. Uneventful recovery. Has had no pain or vomiting since operation. It is as yet too early to determine the result in this case.

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SIGNIFICANCE OF THE AMMONIA CO-EFFICIENT IN OBSTETRICAL WORK.*

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It has been succinctly remarked that the most beautiful thing of creation is the pregnant woman; and we find Shakespeare alluding to "the pride of pregnancy." So, in the same ratio, is the parturient woman the most appealing, the most pitiful, the most helpless and the most tenderly cared for of all patients. And why is her condition modified by such adjectives? Because of the perilous and hazardous field she must enter for the sake of bearing an off-spring. In our college days the physiology and pathology of gestation and parturition are doled out in a serious and impressive manner, delineating the snares and pitfalls awaiting the woman if her attendant be ignorant, negligent or indifferent; and later, this elaboration is to be amplified by the master tutor EXPERIENCE. Nevertheless, despite careful and rigid attention to all the laws of the hygiene of pregnancy, certain complications are inevitable, chief of which is toxemia. Here I shall endeavor to discuss this phase of pregnancy in terms of ammonia and nitrogen, as found in a complete urinalysis.

The toxemia of pregnancy manifests itself in the form of pernicious nausea and vomiting and in eclampsia with or without convulsions; but, as the ammonia co-efficient work has to deal with the former our attention will be directed to the value of this co-efficient in cases of pernicious nausea and vomiting.

In adapting itself to the profound changes concomitant with pregnancy, the maternal organism might be declared in a state of war, endeavoring to maintain the neutrality of the blood vascular system, of the nervous system, of the excretory system, of the glands of internal secretion and of the many other vital systems of the human economy when vigorously attacked by the incongruous elements of reproduction. Hence, it is not asking too much of your imagination to assume that this constitutional shock is quite sufficient to cause such lesions of certain emunctory organs that would set up pathological conditions requiring the minute, immediate and careful study on the part of the physician. Of course, as outlined above, the nervous system or the excretory system or even the generative system might be the exciting influence in the condition we are to discuss. Therefore, an *a priori* conclusion might be deduced and for the sake of argument a definite classification of per-

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nicious nausea and vomiting be declared, namely: neurotic, reflex, toxic.

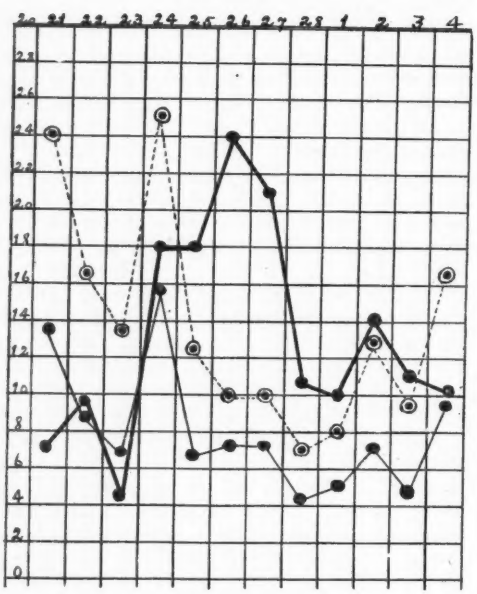
The first two types must be disposed of briefly, for it is the toxic variety that causes most alarm and consequently, is most important. As is thoroughly understood, the reflex vomiting of pregnancy is usually associated with some disorder of the generative organs as retrodisplacements, lacerated os uteri; and, upon correction of the trouble the patient recovers her former good health and goes on to full term. Whether the good results are due to the actual relief of the existing condition or to the mental suggestion, is a debatable question; and though I incline toward the latter view, it behooves me to grant to each one of you the prerogatives of a free agent. The neurotic type is the most frequent, the most amenable to treatment and comparatively of little danger, provided the diagnosis is made sufficiently early to forestall the development of a more serious situation. And, I say it is of little danger if properly handled, because the exciting cause is an inanition, the severity of which depends upon the master psychologist, whether it be physician or patient. Therefore, it seems plausible to assume that pernicious vomiting should be regarded as an intoxication, acid in character, incident to inanition rather than assuming the existence of a real toxemia. However, reverting to a preceding argument, namely, what causes the acid intoxication, we find one of the missing links in the chain of research, and as yet, we are not satisfied to use as a subterfuge the much abused phrase "faulty metabolism," or "faulty oxidation," this is too broad. On the other hand, we can refer to the introduction of this paper, wherein it was stated that the shock of pregnancy causes such profound changes in the maternal organism that it fails to have "a perfect biological reaction to the growing ovum," to use a borrowed phrase.

Having laid the predicate, that we know little of the neurotic type of vomiting in pregnancy, let us next inquire into the behavior of the ammonia co-efficient as observed in these cases. The most comprehensive manner in which to note this factor is by reference to the charts of two cases that have come to my notice within the past year. In chart I, the heavy black line indicates the ammonia co-efficient, showing its wide variations from the time I first saw the patient until she was discharged. When the patient came under observation she was nearly two months pregnant; she was greatly emaciated; considerable icterus was present; vomiting ranged from fifteen to eighteen times, per diem; unable to retain water at times, to say nothing of the pronounced aversion for all kinds of food; quite despondent, and extremely weakened. Until the first twenty-four hour specimen of urine could be obtained, the treatment consisted of nothing by mouth and rectal feedings of peptonized milk three ounces every three hours, with the full realization that but little absorption of nutrition is recorded by such a scheme. The first complete total nitrogen and ammonia test showed the ammonia co-efficient to be 7.3% and total nitrogen 13.5 Gms. The results of subsequent tests are diagrammatically represented by the curves on the chart, and silent monitors as they are, I call upon the gods of reason to offer adequate explanation for the mystical antics the ammonia co-efficient and total nitrogen performed. Without going further into the case report, and despite the apparently grave physical signs present, the diagnosis of neurotic vomiting was made; the prognosis was pronounced favorable; and such treatment instituted that the woman was restored to sufficient health to continue enabled to continue with her pregnancy, uneventfully, and to be delivered on September 21, 1915, of a nine-pound boy baby, at full term. A study of the ammonia co-efficient curve, showed the following, which facilitated in summing up a positive diagnosis: First, below 10%, an arbitrary zone signifying safety, for the first three days; secondly, the wide oscillations associated with nervous influences, causing inability to retain nourishment; thirdly, with the sudden rise in the ammonia co-efficient there was not the corresponding change in the physical condition; and fourthly, the co-efficient is only valuable in connection with physical signs and clinical symptoms.

The toxic type of vomiting is less frequent, but proportionately more dangerous than either of the two types just discussed. Again we find theories advanced as to the causative factor of this condition, and again we resort to the familiar argu-

ment "faulty metabolism." However, from the autopsy room, we are assured of the existence of serious degenerative lesions in the liver and kidneys, while from the laboratory reports we observe striking changes in metabolism which are usually characterized by marked distortions in the nitrogenous partition, particularly manifested by an increase in the proportion of total nitrogen excreted as ammonia. In connection with these facts the clinical symptoms must be mentioned, and summed up they are: failure to react to suggestive treatment and rest in bed after thirty-six to forty-eight hours, marked icterus, appearance of coffee-ground vomitus, and a semi-comatose condition. Most naturally it is the aim of the physician to make a corroborative diagnosis before antemortem symptoms ensue and as the determination of the ammonia co-efficient is an important aid in reaching an early diagnosis, our attention is next directed to this phase in toxic vomiting.

CHART 1



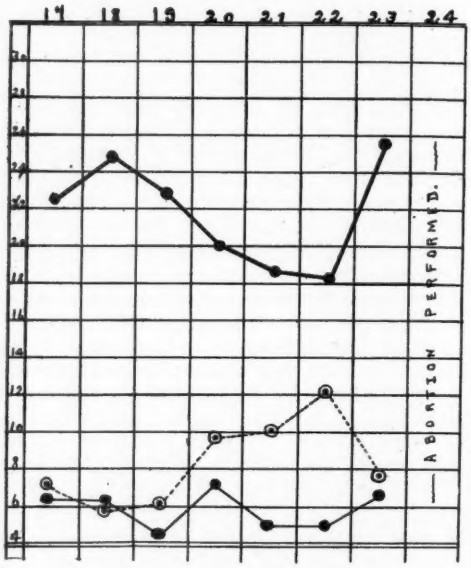
NEUROTIC VOMITING

February, 1915.

Light black lines: Total Nitrogen.
Heavy black lines: Ammonia co-efficient.
Dotted lines: Urea.

In chart II, the first nitrogen determination showed total nitrogen to be 6. Gms.; ammonia co-efficient 22.5% with ammonia nitrogen 1.38 Gms. The second urinalysis gave an ammonia co-efficient of 24.4%, but thereafter for four successive days it fell gradually, getting as low as 18.1%. The interesting feature of the case was the progressive decline of the patient despite the fact that she retained forced feeding very well, and psychology was brought to bear upon her. Twenty-seven months prior to this pregnancy, the patient had had a therapeutic abortion and in consequence of the operation had sustained a cervical laceration with subsequent repair. On making a bi-manual examination to diagnose pregnancy, I observed stitches in the cervix and suggested to the patient the influence that this might have on her condition. Thinking the psychological moment had arrived I seized upon it, but the harvest reap approximated nil.

CHART 2



TOXIC VOMITING

March, 1915.

Light black lines: Total Nitrogen.
Heavy black lines: Ammonia co-efficient.
Dotted lines: Urea.

Therefore, after all circumstances had been considered, a study of the ammonia

CHART 1—Concluded

February, 1915	March											
	21	22	23	24	25	26	27	28	1	2	3	4
Total Urea	24	16.5	13.7	25.1	12.2	10.0	10.0	7.0	8.0	13.0	9.5	16.5
Total Urine	1000	1200	1200	200	1000	2000	2500	1000	635	550	550	700
Total Nitrogen	13.5	8.4	6.9	15.9	6.6	7.0	7.0	4.2	5.1	7.0	4.9	8.4
Ammonia	.994	.806	.336	.285	6.25	1.73	1.20	.462	.518	1.03	.583	.806
Ammonia %	7.3	9.6	4.8	18	18	24	21	10.8	10	14	11	9.6
Specific Grav.	1.022	1.018	1.011	1.032	1.020	1.008	1.009	1.012	1.013	1.010	1.018	1.013

CHART 2—Concluded

March	17	18	19	20	21	22	23	24
Total Urea	6.5	6.0	6.0	9.5	10.0	12.0	5.7	?
Total Urine	1300	1375	1500	1425	1250	1100	800	?
Total Nitrogen	6.1	6.1	4.5	7.0	5.0	5.0	6.4	?
Ammonia	1.38	1.49	1.02	1.41	.933	.906	1.59	?
Ammonia %	22.5	24.4	22.6	20.0	18.6	18.1	25.8	?
Specific Gravity	1.012	1.013	1.012	1.009	1.010	1.011	1.008	?

co-efficient curve enabled me strongly to suspect toxemic vomiting; and when on the eighth day I found the ammonia co-efficient of the seventh day to be 25.8% and the patient unquestionably more toxic, a therapeutic abortion was advised and promptly performed. This was advised on account of the ammonia co-efficient rise. As brought out above, the ammonia co-efficient in neurotic vomiting might mount to high levels, but I do not think a co-efficient with slight variations and persistently high would be indicative of aught else but trouble with the oxidizing agents of the body, as demonstrated in the case just recited, or in other words, in case of toxic vomiting.

The high ammonia co-efficient might be due to the inability of the liver to properly oxidize nitrogenous material. Furthermore, similar variations of the ammonia co-efficient have been observed in acute yellow atrophy of the liver, in certain forms of gastro-enteritis in children, and in cases of acute starvation. And yet, to maintain that the condition arises from faulty oxidation seems to be quite problematical; for surely, the entire liver does not undergo degenerative changes, as we possess sufficient evidence that the preservation of small quantities of liver tissue will answer the ordinary purposes of metabolism, it seems the verdict is sustained without begging the question.

Then, what reasonable explanation can be advanced for the high ammonia co-efficient in toxic vomiting? At this juncture, the right of ascribing hypothetical theories must be tendered to the research man who must determine whether the change is directly due to the inability of the diseased liver to effect complete oxidation, or whether it is an acid intoxication or some other condition, and ultimately, to determine whether the toxic material comes from the mother or from the fetus. At the same time definite conclusions relative to the non-coagulable nitrogen co-efficient in the toxemias of pregnancy must be recorded, thus augmenting the usefulness of such indices for estimating the renal and hepatic functions.

In passing, your attention might be directed to the standard of the nitrogen coagulable protein estimates as observed in normal pregnant patients: 420 Gms. as upper limit for non-coagulable nitrogen and 3.9% as upper limit for the non-coagulable nitrogen co-efficient. For more exhaustive study of this co-efficient, which is quite new, I refer you to an article by Dr. E. D. Plass in the "American Journal of Obstetrics and Diseases of Children," Vol. LXXI, No. 4, 1915.

In the present stage of investigation, it can be asserted with impunity that a high ammonia co-efficient (over 10-12%) is indicative of serious trouble, and when associated with clinical findings, proves an admirable diagnostic agent. I do not think a diagnosis of a serious nature, leading to the interruption of pregnancy, should be concluded without a complete nitrogen determination of the urine, because of the omnipresent neurotic element the medical mind knows to exist in every case of preg-

nancy. I would like to ask the question, is there anyone here who has not seen women simulate pernicious nausea and vomiting in order to have their pregnancy interrupted? In case No. 1, some weeks after the initial trouble had been relieved, I learned the patient had endeavored to produce an abortion by the administration of various drugs, and failing, had hopes of securing the aid of a physician to relieve her of the unwelcomed heir.

This discussion cannot be closed without referring to an incident of more or less importance and interest. Whipple and Sperry, until recently of Johns Hopkins Hospital, examined a series of blood specimens from every patient delivered in that institution by surgical procedure with chloroform as the anesthesia. This included patients with severe toxemia and those in excellent health. They demonstrated the identical lesions of the liver (fatty degeneration with central necrosis of the lobules) as are found in cases of toxic vomiting. Whether or not the autopsy findings in patients dying from toxemic vomiting are produced by the pathological condition or by the chloroform used at the time abortion is performed, is a matter of conjecture. At any rate, it is food for thought, and it is the opinion of the writer that the extensive use of nitrous-oxid oxygen anesthesia will aid considerably in clearing up the controversy.

The methods of treating the toxemias of pregnancy have not enjoyed immunity from the workings of brilliant minds. For instance, Mayer, Halladay and Terunne fed patients corpus luteum. Luquex administers 1 Gm. sugar for each kilogram of body weight. Rebaudi and Seigmund give thyroid extract and adrenalin. Until the etiology is more comprehensively explained, there will be as many methods of treatment as cases of toxemia. But, the main argument to bear in mind is that starvation is most often the predisposing, as well as the exciting cause.

CASE REPORTS

Case I.—Mrs. C., white, age 40. 4POM.—Seen for the first time on February 19, 1915. The following history was obtained: For nearly two months, since December 21, 1914, the patient had been suffering from severe nausea and vomiting, both being considerably aggravated one week before I saw her. She had the greatest aversion for food and liquids, especially water; had retained nothing by mouth for the week before my first visit and had lost considerable sleep, being unable to sleep because of the worry over her condition. Considerable loss of weight. Markedly devitalized and had been decidedly icteroid for several days. Several attempts to produce an abortion had been made by the administration of drugs by mouth.

Treatment: absolute rest in bed, nothing by mouth, forced rectal feeding of peptonized milk, three ounces every three hours. Enemata of glucose and soda bicarbonate, aa ʒi twice daily. After the third day the suggestive treatment was begun, which seems to have aggravated the neurosis, judging from the rise in the ammonia co-efficient. Cerium oxalate gr. v, and soda bicarbonate gr. x, by mouth, every 4 hours. Silver nitrate gr. ¼ and pepsin gr. v in capsule, t.i.d. Blaud's pill t.i.d. Bromid solution at night. The diet was nourishing and moderate in quantity. No raw fruits. On sixth day of illness the patient saw numerous callers against advice, and had extremely nervous spell with accompanying variations in the nitrogenous determination. The diet was again restricted and rectal feedings were forced with salutary results.

Urinalysis: no albumin; no acetone; considerable indican; no casts.

Results: full term gestation, nursing baby and good health.

Case II.—Mrs. S., white, age 32, 1POM.—Patient was first seen on March 17, 1915. The following history was obtained: Two and a half years previously she became pregnant, and from the first week of pregnancy until the sixth month she was confined to bed with persistent nausea and vomiting. She put herself in the hands of physicians and after consultation, they agreed the only alternative to pursue was a therapeutic abortion, and promptly performed it. The condition improved and until Feb. 15, 1915, she enjoyed uninterrupted health. On this date she missed the menses for the first time, and in a day or two afterward began with nausea and vomiting of the pronounced type. When I saw her for the first time and was able to get the history, I thought perhaps she was quite neurotic and that the trouble might be overcome. On the previous occasion the physician diagnosed "kidney trouble," in the language of the patient.

She was in bed and apparently comfortable, except for spells of nausea and vomiting; she was somewhat icteroid; was unable to retain anything by mouth; was unable to sleep, and there was considerable loss of weight. She had a sincere desire for an off-spring.

The following treatment was instituted: Nothing by mouth, enemata of soda bicarbonate and glucose aa ʒi, twice daily per Murphy drip; peptonized milk per rectum every three hours. The patient was kept on this therapy for two days, and as no improvement was made it was deemed advisable to wash out the stomach.

The first complete urinalysis showed a slight trace of albumin (normal trace) and no casts. Acetone positive. Indican positive. Ammonia co-efficient 22.5%. Total nitrogen 6.0 Gms. to the litre Ammonia nitrogen 1.38 Gms. Thinking the acidosis was a starvation condition, the patient was removed to the hospital where especial attention could be secured. Here the same treatment was

pursued and there seemed to be marked improvement for three successive days. The stitches left in the cervix at the time of the first therapeutic abortion, were removed with the hope of obtaining salutary results, and though there was slight improvement, it was not lasting. Given bromids with effect. Same enemas given, as at home. She was started on liquids per mouth on the seventh day (3-23-'15); and after the first feeding was unable to retain anything. This feeding was instituted upon the strength of removing the stitches and for psychology. The condition grew progressively worse and the patient seemed more profoundy toxic. The ammonia co-efficient had risen to 25.8%. The icterus was more pronounced. The pulse was 110, an increase of 20 beats. After a thorough study of the nitrogen determination, and after the clinical symptoms seemed aggravated, the pregnancy was terminated March 24, 1915, by dilatation and curettage.

Results: Uneventful recovery immediately following operation.

SUMMARY

With this very inadequate and cursory analysis of this commanding subject, the following conclusions might be adduced:

1. The imperfect reaction of the maternal organism to the growing ovum is the usual predisposing factor in all cases of vomiting in pregnancy.
2. Reflex or neurotic influences are usually the exciting factor.
3. True toxemic vomiting is accompanied by serious changes in metabolism.
4. A high ammonia co-efficient is not *specific*. It may indicate toxic vomiting or starvation following neurotic vomiting, or an acidosis due to various causes.
5. The ammonia co-efficient is merely a danger signal and is always to be considered in connection with the clinical symptoms. This is especially applicable to high co-efficient.
6. A low ammonia co-efficient indicates neurotic vomiting and is readily treated by suggestion.
7. When there are slight variations of and a persistently high ammonia co-efficient, a positive diagnosis of toxemic vomiting is indicated. When the ammonia co-efficient curve has wide variations, sometimes falling to a low percentage, and is associated with pronounced nervous influences, there is little doubt that one is dealing with neurotic vomiting.
8. Chloroform produces characteristic lesions of the liver, and therefore should not be used as the anesthetic. The best anesthesia is nitrous oxid oxygen.
9. The determination of the non-coagulable nitrogen co-efficient assists in differentiating renal from hepatic conditions. Its chief use is to indicate the extent of renal involvement.

LOCAL ANESTHESIA IN ABDOMINAL SURGERY

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During recent years indications and demands for local anesthesia have steadily become more and more recognized until now in some fields of general surgery the method demands its just recognition and adoption. But for the reason that the profession has been less prone to make use of local anesthesia in abdominal surgery I take occasion to draw attention to its uses in this especial field.

We hope to show that, by the technique as outlined below, we fulfill in a large measure the demands which Crile has outlined in his notable animal experimentations. Through the "twilight sleep," produced by liberal doses of scopolamin and morphine, is eliminated largely psychic shock; through nerve blocking and infiltration anesthesia is eliminated traumatic shock; and with these and the small amount of post-operative discomfort following local anesthesia we fulfill in a large measure the indications as outlined by Crile in his efforts to produce a wholly shockless anesthesia.

In the last eighteen months we have done, under local anesthesia, eighteen abdominal operations, consisting of eleven cases of chronic and acute appendicitis; two cases of gastro-enterostomy, one for ulcer and one for carcinoma; one drainage in generalized peritonitis; and four cases of exploratory laparotomy, one proving to be chronic appendicitis, which was removed; one a fibrous gall-bladder with adhesions, which was removed; and in two no operation was done, one of which proved to be an early tuberculous peritonitis without demonstrable focal lesion. A large number of these cases have been among patients in the institution (fifteen)

while the remaining three were nurses. (The two cases of acute appenditicis occurred in nurses on the surgical ward, who had necessarily witnessed like operations on patients.) The method in these cases, as well as in a number of cases among the hospital patients, was employed as a result of request.

The technique is as follows: When practical the patient for operation is put to bed two days previously, being given soft diet with eliminative treatment. (We believe that the degree of success with local anesthesia in abdominal surgery depends largely upon the preparation of the alimentary canal. If the intestine is not well emptied the tension will prove troublesome in closing.) The night before they are given the usual preparation with the exception that liquid diet has been continued with a glass of milk two hours before operation. One hour before operation a hypodermic of morphine gr. ¼ with scopolamin gr. 1/100 is administered. One-half hour before operation half of the former dose is given. This produces a mild amnesia eliminating psychic shock and adding materially to the comfort of both patient and operator. In no instance have we noted bad results from these drugs given in such doses. When everything is ready and in perfect order (never before), the patient is rolled to the operating room, having been placed upon the table before the second hypodermic is given. Perfect order must be insisted upon, but unless the patient is sound asleep conversation in subdued tone is preferable to perfect quiet, as the sound of the instruments often has a tendency to excite the patient. The patient is placed on the table in semi-sitting position; this relaxes the abdominal muscles, making the tension on wound edges less demanded. This we take as a very necessary precaution. For anesthesia we have used routinely 1 to 400 novocain solution in unlimited amounts, at times using as much as six to eight ounces, and in no instance have we noted bad results.

In this series we have in all cases made use of the right rectus incision — either splitting the fibers of the muscles or deflexing the belly of muscle to outside. We believe this to be the incision of choice for the reason that it permits an easy and free incision which results in less tension of wound edges, and less traction on mesentery, at the same time insuring good closure, which are factors to be much considered.

For infiltration we have used both methods of injection, perineural or nerve blocking and infiltration in line of incision. The line of incision is carefully infiltrated down to the sheath of the rectus muscle. Next, with a long needle, the outer edge of the rectus sheat is blocked the entire length of the incision. This is accomplished by injection of 5 c. c. of solution along the edges of the rectus at 1-inch distances. By this time perfect anesthesia has occurred in the line of incision.

The skin and sub-cutaneous tissue is opened down to the rectus muscle, and at this stage the rectus sheath and muscle is infiltrated in the line of incision. While anesthesia is taking place any bleeding vessel in the edges of the wound may be tied, special care being taken to avoid undue trauma. Special care must also be taken in opening the rectus sheath to prevent injury to large nerve trunks; and in case they are encountered they must be carefully blocked. The rectus muscle having been split or deflected, the edges of the wound are carefully retracted. This is preferably done by the gloved hand of an assistant. We make an effort to use as little as possible metal retractors. Next, the peritoneum is carefully infiltrated with a small needle. (If this is properly done the peritoneal cavity can be opened without any discomfort to the patient.) We have shown repeatedly that the discomfort experienced is mostly the result of traction and not from trauma of knife or scissors. This is also true in dealing with the mesentery or omentum.

In a large percentage of cases we have noted no pain experienced from the division or even in tying off the mesoappendix, when care is taken not to make traction; however, when necessary these tissues can be infiltrated. In cases of fibrous adhesions no infiltration is demanded, as these cause no pain. Traction on mesentery invariably causes colicky pains, and in one or two instances has caused the patient to vomit.

In the event a gastro-enterostomy is being done, a free incision is demanded, which will permit of clear exposure without traction. Only the infiltration in the gastro-colic ligament will be necessary. There is little or no discomfort caused by clamping or sewing of the colon, stomach, jejunum or ileum. In the two cases of gastro-enterostomy there was no disposition to vomit, and the patient complained of no discomfort. In the case of cholecystectomy there was some discomfort when we made an effort to deliver the right lobe of liver, due to traction, but there was no discomfort when freeing the adhesions or from removal of the gall-bladder. The tissues were of course first carefully blocked and infiltrated.

We have experienced little or no trouble in closures in conditions of the lower abdomen, but in two cases of incision of the upper abdomen there was more difficulty experienced in closure, and in one case a light general anesthesia was demanded. With this exception we have experienced no serious trouble and have had no post-operative hernias. The closures have been the usual ones, by layers.

The post-operative discomfort following local anesthesia compared with that following general anesthesia is practically nil. A patient reacts from morphine and scopolamin in from four to six hours with little or no recollection of the operation. It has been rather difficult in a certain percentage of cases for them to realize for a time that an operation had been done. In a number, the patient has slept soundly through operation. Except in the stomach cases, they have routinely begun soft diet as soon as they reacted from the hypnotic, and with the exception of one case of gastro-enterostomy, none has had post-operative vomiting. In a few of the cases there has occurred voluntary movement of bowels before any eliminative treatment was instituted. In no case has troublesome tympanites been noted, showing that peristalsis had been little or not at all impaired. One of the most marked and gratifying things to be noted following local anesthesia is the lack of depression. The larger percentage are bright the following day, and on the second day manifest usual interest in things, which is certainly not the case following general anesthesia.

We have undertaken no pelvic work under local anesthesia, but feel with perfect assurance that surgery of the tubes or the ovaries might be undertaken with safety. In conditions demanding much trauma to the pelvic peritoneum we question the advisability of the method. If local anesthesia is to be used this had best be undertaken under paravertebral and parasacral nerve blocking.

While local anesthesia unquestionably has its greatest field of usefulness in the run down, debilitated type, and in the senile, fortunately the very class unfit for general anesthesia, it can be undertaken with safety in much broader fields and with a more profound knowledge of the contraindication and unfavorable sequelae incident to general anesthesia; local anesthesia by one of the various methods now offered must demand more and more the attention of the painstaking, thoughtful men in surgery.

For the reason that this discussion represents work done among the insane, I wish to draw attention to the fact that the larger number of those operated upon have not been those showing elements of dementia. Upon the other hand, a summary shows that most have been in some form of the exaggerated or neurasthenical type. Hence, I feel sure that the method in the sane, who would offer more perfect co-operation, would be even more indicated, and easier carried out.

For the reason that there are well defined contraindications for general anesthesia in the insane, and for the reason that our results have been routinely considered favorable, we, when practical, in all cases make use of local anesthesia. (As a result of war conditions during recent months the work has been restricted, being unable to secure a sufficient amount of novocain.)

Local anesthesia in abdominal surgery unquestionably has its greatest field of usefulness in the sub-acute and chronic conditions. I would, however, have no hesitancy in recommending the method in well defined acute conditions or in simple drainage. A recent case of generalized peritonitis successfully drained and irri-

gated under local anesthesia is one of many cases seen today in surgery showing profound indications for the method. Any form of general anesthesia in this case would unquestionably have resulted in a fatality. Unless there were clear contraindications for general anesthesia, I would feel a hesitancy in recommending local anesthesia in obscure inflammatory conditions, and in the presence of a mass.

The Bryce Hospital.

RARE CASE OF INTESTINAL STASIS AND ITS TREATMENT

By Jas. T. Nix, Jr., M.D.,
New Orleans, La.

The following history was taken verbatim from the patient by her sister, a stenographer, and mailed to me. As it represents individuality, and the patient's own sentiment regarding her suffering and heterogeneous treatments, I shall repeat it without change of phraseology so that you may view the case from the same angle as it was presented to me:

CASE HISTORY

Mrs. J. W. G., age 34: "When I was two years old, I was a delicate child; and when I started to talk I could not be understood very well, as there seemed to be some trouble in my nose. At four years I had a terrible abscess back of my left ear, which abscess was lanced. At eight years I felt a pain in my left side occasionally, just beneath the ribs, especially when out driving or horseback riding. If I remember correctly, I suffered from constipation and had to take anemas.

"I menstruated at fifteen years (1897). Three weeks after the first menstruation I lifted a heavy package and immediately started to menstruate again, and from that time I menstruated every three weeks. A few months after that I had severe cramps every time I menstruated. I almost had spasms, and the cramps lasted for eight days. I also had dyspepsia; anything I ate or drank would sour on my stomach, even water, and I belched continually. At times I had running of the bowels and then was constipated for five or six days; and during those years my left side gradually grew worse. At eighteen years I was suddenly taken very ill,—high fever, vomiting all the time and running of the bowels. I was unconscious for three weeks, purging blood every day. After recovery I was still weak and suffered with my side. Menstruation was more prolonged and painful.

"At the age of twenty-one I married. During the first year the doctor scraped my womb and packed it. My stomach and side got worse and I had to be put on a diet all the time, and always taking laxatives. The doctors finally decided to wash my stomach, claiming I had ulcers. I was then ordered to take enemas; and my mother would give me three, one right after another; and the stools were hard and round like marbles. At other times I was ordered to drink two glasses of sweet oil, which almost smothered me, and three or four days later I would pass about eight of those marble-like substances in stools.

"I was in bed almost continually, suffering very much with my sides and cramp-like pains in my abdomen, especially after eating, so the doctors decided to operate on me for adhesions. Three weeks after the first operation my right side began to hurt,—the same pain I had in the left. The first operation was under date of August 15, 1905. Eleven or twelve months afterward I was operated on again in the right side for adhesions. At that time I was residing in the country and was operated on in the country.

Picture taken fifteen minutes after ingestion of bismuth meal. Nothing abnormal except the slight defect in filling near the pyloric end. Operation showed this to be due to a strong band of adhesions between stomach and abdominal wall. Otherwise stomach normal in size, shape and position.

"In 1909, I moved to New Orleans and was still suffering in both sides and taking laxatives every day, and sometimes two or three a day. In fact, three or four hours after eating, I still felt the food in my stomach like a heavy lump, which would nauseate and smother me. There were very few things I could eat at that time. I could barely stand the pains, could never rest, was very nervous, and was always taking medicine, laxatives, and enemas.

"July 21, 1910, I was again operated on in New Orleans, and both ovaries were removed.

Six-hour picture: Evidence of mild gastric stasis with concentration of meal in small bowel at right iliac and hypogastric areas.

After every operation I was still in the same condition and getting weaker every day, as I was on light diet and continually taking laxatives.

"In April, 1911, I was again operated on at a private institution in New Orleans and my appendix removed. All these operations made of me a nervous wreck and weakened me so much that I could scarcely stay out of bed.

"I remained in the same condition for three years and was then treated for tape worm, without results. So I decided to give up doctors and take laxatives as often as necessary, as there was no hope for me, and no need of changing physicians so frequently. Some doctors claimed I had a floating kidney and wanted to operate on me for that.

"In 1914, I left the city and went back to the country. Every day I would take cascara at bed time, castor oil in the morning, and Epsom salts in the afternoon. Sometimes I would change the nature of the laxatives. Enemas could not help me, but only made me suffer so I could not take them.

"In May, 1915, I decided to try another doctor and after examination he claimed I had hookworm and prescribed an extensive course of thymol. In conjunction with this I was given enemas of nitrate of silver, which caused cruel pains each time. My strength was rapidly leaving me; pains were intense; I could no longer get out of bed, and I felt I was dying. So I quit doctors again. No matter what I ate caused me to have extreme pain in my abdomen."

PHYSICAL EXAMINATION

March 2, 1916. Physical examination elicited the following points of interest: Extremely emaciated female. Nulliparous. Abdomen flat above umbilicus, but much distended and very sensitive to pain over lower half. This conspicuous ballooning of intestines in iliac and hypogastric areas was highly suggestive of intra-abdominal ptosis, particularly enteroptosis and coloptosis, so a series of X-ray pictures were requested with this idea in view. Skin surface of abdominal wall showed four old cicatrices, landmarks of previous sections.

Pelvic examination disclosed nothing of interest.

X-RAY FINDINGS

The following report of X-ray findings

Twenty-four-hour picture: Notice concentration of meal in colon, entire absence of transverse colon from its normal position because of the extreme degree of ptosis, and apparent multiple adhesions binding intimately in the form of a U-like loop the transverse and descending portions of the large bowel.

was submitted by Dr. J. B. Harney, Roentgenologist, Hotel Dieu:

First examination, fifteen minutes after ingestion of bismuth meal: Stomach apparently is normal as to position and size. Near pyloric extremity it presents a shredding-out-like defect in filling. The duodenal cap seems to round out fairly well, however.

Second examination, six hours later: Mild degree of gastric stasis plus evidence of defect. The greater part of meal is now found in small intestines, which appear to be massed within right iliac fossa.

Third examination, twenty-four hours' duration: Meal is to be found distributed throughout the entire length of the colon. Splenic extremity of transverse colon is ptosed and presents a U-like loop, which appears to be adherent to the corresponding portion of the descending colon.

These findings suggest pylorospasm plus ptosis and marked intestinal adhesions.

Interpretation of these pictures verified emphatically. the pronounced physical

Showing multiple abdominal incisions. The long median scar represents site of last operation along with line in which two previous laparotomies were performed, and the old cicatrices excised.

signs and strongly corroborative history, certifying the diagnosis, intestinal stasis.

OPERATION

As soon as the patient was anesthetized the rectum was irrigated with boracic acid solution and one-half of a large size Murphy button inserted. To this portion of the button was tied a piece of heavy silk, the free end of which protruded from the anus.

On opening the abdomen a large ball of small bowel could be seen firmly glued together, adherent to the abdominal wall, and prolapsed into the pelvis. Uterus was infantile in dimensions and showed no inflammatory signs. The appendix and both ovaries had been previously excised. The colon was hopelessly kinked from cecum to sigmoid, exhibiting the most extreme type of ptosis.

TECHNIQUE

Adhesions between various surfaces of small bowel and abdominal parietes were thoroughly divided, and the raw peritoneal surfaces sponged with a sterilized 3% solution of sodium citrate in order to prevent subsequent adhesions, if possible.

The lower end of the Murphy button was now manipulated by means of a hand in the abdominal cavity, and held in position at the beginning of the sigmoid. The ileum, at a point near the ileo-cecal valve, was divided between clamps with a paquelin cautery. The cecal end was closed by a continuous suture and inverted with a purse-string stitch, while into the upper end was inserted the other half of the Murphy button.

The halves of the button were now joined and the operation completed. After twelve days the button had not passed, so with a little traction upon the silk tape it was easily removed. The patient made an uneventful recovery.

CATAMNESIS

It is now about six weeks since the operation, and the patient writes as follows:

"I am now able to eat solid food and digest same. My bowels move just as well as a normal person's. I feel altogether different than before the operation, with the exception of a slight pain in my right side. I have not taken any purgatives since the last one you gave me on the third day after the operation."

MURPHY BUTTON

This application of the Murphy button for short circuiting so far as I know is original. Its advantages are:

1. Simplicity. It is shorter by fifteen minutes than the suture method.

2. The most dangerous section of bowel from an infectious standpoint, the colon, is not incised, but simply punctured with a paquelin cautery, thereby eliminating contamination.

3. It is an end-to-side anastamosis, simulating the ileo-cecal valve.

4. If the button lodges and is not passed in due time, it can be removed with slight traction upon the attached thread.

THE RELATION OF THE PROSTATE GLAND AND SEMINAL VESICLES TO THE ARTHRITIDES*

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It is generally accepted that the absorption of toxic substances from diseased tissue, such as we find in tonsillitis, prostatitis, seminal vesiculitis, abscess at the root of a tooth, or inflammation of the accessory sinuses, may cause an inflammatory condition in, or about the joints, which manifests itself as an arthritis, a periarthritis, or a periostitis. This is probably due to the fact that the joints are subject to considerable traumatism during exercise.

In the course of a urethritis, produced by the gonococcus, it is not unusual for the patient to develop an arthritis, or a periarthritis. But strangely this does not occur while the inflammation is confined to the anterior urethra, which is no doubt because of failure on the part of the anterior urethra to absorb toxic substances, although absorption readily takes place from the posterior urethra, prostate gland, and seminal vesicles.

Fuller and others observing this were led to carefully study the relationship existing between inflammation of the joints and inflammation of the prostate gland and seminal vesicles with the result that drainage of the seminal vesicles was advised in seminal vesiculitis of an extreme nature complicated by perivesiculitis and joint involvement, when massage was ineffective. The result of operation supported the theory, for after draining the vesicle's improvement was noted in every case and complete recovery in many.

Following the primary work done by Fuller, Hitchens, Brown, Young, Geraghty and Culver made extensive bacteriological studies of these infections and were able to isolate numerous pathogenic organisms, among which were found the staphylococcus, the streptococcus, the bacillus proteus, the colon bacillus, the gonococcus, diphtheroids, and in some cases an anaerobic streptococcus.

To fully appreciate the susceptibility of the prostate gland and seminal vesicles to infection it will be necessary to describe their anatomical structure and their physical and physiological relationship to other organs.

The prostate gland is situated between the bladder and the rectum, the base forming a part of the floor of the bladder. The apex is directed downward and forward and is attached to the triangular ligament. The posterior surface is in relation with the rectum an inch to an inch and a half from the anus. The anterior surface is loosely connected with the symphysis pubis by fatty tissue.

The gland anatomically is divided into a right and a left lobe. Lately, however, Lowsley, after examining the prostates of boys before the age of puberty, reached the conclusion that there were five distinct anatomical lobes, which he designated as the middle, right lateral, left lateral, anterior, and posterior. Surgically, four lobes are usually spoken of,—right, left, middle and posterior.

The true capsule is formed of mixed fibrous and muscular tissue, branches of which are sent into the gland to form the stroma or framework. This fibrous and muscular tissue forms the bulk of the gland.

The essential tissue is glandular of the tubular variety, the tubules uniting to form the prostatic ducts, or sinuses, eighteen to twenty-five in number, which open to either side of the verumontanum in the prostatic portion of the urethra. The gland is completely surrounded by a sheath of fascia, surgically known as the capsule. This sheath, or capsule, is very dense and usually limits inflammation of the gland, except on the urethral surface.

The arteries supplying the prostate are derived from the internal pudic, the inferior vesical and the middle hemorrhoidal. They divide and subdivide, giving

*Read before the Medical Association of the State of Alabama, Mobile, April, 1916.

branches to each acinus as in other glandular structures. The veins and lymphatics form a perfect network between the true capsule, and the sheath or surgical capsule of the gland, which may account for rapid absorption.

The seminal vesicles are located just above the prostate gland and are made up of two tubes one and one-half inches in length in the normal convoluted form; but when straightened the length is increased to four or six inches. The main tube presents four or five convoluted branches. The seminal vesicles leave each other at right angles, and the ampula of the vas is found on their inner surface. They terminate in the ejaculatory ducts which are formed by a junction of the ducts from the seminal vesicles and the vas from the epididymis. The ejaculatory ducts, two in number, open on the surface of the verumontanum on either side of the sinus pocularis in the posterior urethra.

It can readily be seen from this description that any pathogenic organism gaining entrance to the urinary tract can easily enter the ejaculatory ducts, the prostatic ducts, or both. This is why so many pathogenic organisms from the upper part of the urinary tract, such as the staphylococcus, streptococcus and typhoid bacillus, reach the prostate gland and vesicles. The same may be said of infections of the anterior urethra. And when we look carefully at the anatomical relationship existing between the urethra, the vesicles and the prostate gland, we wonder why every case of acute gonorrhea is not complicated by a prostatitis or a seminal vesiculitis.

In addition to these two modes of infection, it will be necessary to consider infection by contiguity of tissues from the rectum, following proctitis, ulcer or infected hemorrhoids, and infection by means of the lymphatics or the blood stream, although the latter are rare.

Simple inflammation or congestion of the prostate gland and seminal vesicles, caused by constipation, excessive masturbation, the use of condoms, long-continued erections not followed by coitus, and abnormal forms of sexual intercourse, is said to be a predisposing factor of the greatest importance in infection; and the patient should be questioned carefully regarding them.

The prostate gland, in view of its location, performs a double function. It is first concerned with the sexual act, secreting the prostatic fluid, and secondly forming, as it does, a part of the floor and outlet of the bladder, it assists in urination. The symptoms can therefore be divided into sexual, urinary and general.

Under the head of sexual would be placed impotence, increased sexual desire, due probably to irritation, deferred ejaculation, premature ejaculation and reflex nervous disturbances connected with coitus such as headache and vertigo.

A majority of the urinary symptoms are terminal and this is accounted for by the fact that the muscles in and about the prostate assist in forcing the last part of the urine from the bladder. They consist of pain at the end of urination, terminal hemorrhage, last urine cloudy, partial retention, and frequent desire to urinate.

The general symptoms are irregular, but the most consistent are pain in the lumbar region, severe pain in the coccyx, stiffness in the muscles attached to the tuberosity and the spine of the ischium, causing a stiffness when the patient arises after sitting for a few minutes, tender heal, inflammation in or about the joints, arthritis, periarthritis or periostitis.

Symptoms referable to the vesicles can also be divided into sexual, urinary, and general. Loss of sexual power, sometimes preceded by increased sexual desire, frequent painful erection, emissions, day or night, painful ejaculation, bloody semen and vesicular colic, point very strongly to disease of the seminal vesicles.

Urinary disturbances pointing to diseased vesicles would be blood, pus or shreads in the urine, failure of the bladder to hold a sufficient quantity of urine and recurrent urethral discharge, the last due to re-infection of the anterior urethra from the infected vesicle.

The general symptoms are approximately the same as in prostatitis.

Absolute diagnosis is made only after a careful examination, both general and local, has been conducted and a history of the case has been taken.

Contrary to the general belief, the prostate need not be enlarged to be diseased and a diagnosis should be made on the character of the secretion obtained. If this secretion after a massage, per rectum, contains pus, even though no pathogenic organism is found, the patient is suffering with prostatitis and should be thoroughly massaged until the pus disappears.

Our experience has been that it is almost impossible in old cases of prostatitis to find any organism whatever, unless a culture is made, and in some cases only after repeated cultures.

It is said that the vesicles are diseased if we are able to palpate them, and this is true in a majority of cases. In our experience ability to palpate the seminal vesicles, together with tenderness on pressure, is very suggestive of a pathologic condition which is confirmed by finding pus cells in the secretion.

In severe cases of seminal vesiculitis it is impossible to obtain any secretion whatever; for the ejaculatory ducts are occluded and the vesicle is felt as a fluctuating mass, sensitive to pressure. In some cases the vesicles can be massaged over a period of months without the contents being in the least disturbed.

It is the opinion of every one who has had much experience with seminal vesiculitis that there are some cases that will not respond to massage or vaccine treatment. Brilliant results are reported by Fuller in these conditions following his operation of seminal vesiculotomy; and this in our estimation is the logical method of treatment.

The following histories taken from our records will, we think, be of interest in describing the symptoms, course and treatment of cases of prostatitis, accompanied by seminal vesiculitis and joint involvement:

Case 1.—H. R., white, age 30. Pain in the region of the appendix, cramp-like in character, terminal hemorrhage, general stiffness in the muscles of the buttocks and thighs and arthritis of right wrist.

Tonsils had been removed; teeth and accessory sinuses negative.

On massage, a bloody secretion was obtained from the vesicles which contained pus. Vesicles and prostate very sensitive to pressure. Several weeks later the patient had another attack of vesicular colic, which was so severe that it was necessary to administer morphine. Three days later a cystoscopic examination was made and shadow catheters were passed to the pelvis of the kidney. Kidney function normal. Roentgenogram negative.

Patient was massaged over a period of six months at intervals of three days, each massage being followed by the instillation of silver nitrate one-quarter of 1%. Outdoor exercise was advised. Result: complete recovery, stiffness of muscles disappearing, and inflammation leaving right wrist. Secretion from prostate and vesicles negative for pus.

Luys calls particular attention to vesicular colic and says that a great many cases go to the general surgeon and are operated upon for renal stone, ureteral stone and appendicitis. The colic is very severe and is sometimes accompanied by temperature and simulates intra-abdominal or renal pain to a marked degree. Differential diagnosis is made by massage of the vesicles, which will in every case contain blood uniformly mixed with the secretion.

Case 2.—S. P. A., white, age 28. Gonorrhea four times, including present infection; prostate had never been massaged. Developed an inflammation in the small joints of both feet on the fourth day. As soon as the urethral discharge was checked, massage of the gland and vesicles was instituted.

On the first massage, about a half ounce of secretion was secured from the right vesicle and prostate gland.

The left vesicle was about the size of the thumb, and on palpation fluctuation was noted, but no secretion could be forced through the ducts.

Mixed vaccine was administered, the dose being increased to one billion organisms; massage every other day together with hot baths and hot rectal irrigations.

Vesicular and prostatic massage was continued over a period of six weeks without forcing the contents of the left vesicle into the urethra. In the meanwhile the urethral discharge disappeared and the arthritis improved, but the patient still walked with great difficulty and had to use a cane. Drainage of the vesicles was advised, but the patient refused to be operated upon and left for his home in Kentucky, where he hopes to obtain relief by complete rest.

This patient was absorbing toxic substances from his left vesicle and it was impossible to force the contents into the urethra because of some occlusion of the left ejaculatory duct.

Case 3.—J. M. C., white, age 22. Gonorrhea two years ago. Feet and knees are stiff and swollen. Tonsils had been removed; teeth and sinuses negative.

Seminal vesicles and prostate inflamed and sensitive to pressure. Secretion contains pus. Massage instituted at once. Cultures reveal the presence of the staphylococcus. Autogenous vaccine administered. Vesicles were partially emptied of their contents, but there were four or five nodular spots which did not respond to massage.

Patient was anxious to have his vesicles drained, which was done, the result being marked improvement in his arthritis which will, we think, disappear entirely within the next few months under proper exercise.

We cite this case to show that it is impossible in some instances completely to empty the vesicle even though the ejaculatory ducts are not occluded, due to the fact that the vesicles are first convoluted, and secondly, that there are four or five convoluted branches which must also be drained.

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AUTHORS' ABSTRACTS

Surgery, Gynecology, Obstetrics, and Genito-Urinary Diseases

Multiple Acute Gastric Ulcers After Using Percy's "Cold Iron" for Inoperable Carcinoma; Preliminary Report of a Fatal Case: V. N. Leonard, Baltimore, Md., Journal of the American Medical Association, May 13, 1916, p. 1549.

In the case reported, prolonged "cooking" of carcinomatous masses resulted in acute systemic effects similar to those following extensive cutaneous burns. Histologic examination of the pelvic tissue showed viable carcinoma four days after the use of the "cold iron."

History.—Woman, aged 52 (two children), had had no bleeding since the menopause at 42 until five months before admission. Then she had profuse vaginal bleeding, lasting five days, with loss of weight, slight pain, constipation, and painful defecation. Examination showed inoperable carcinoma, the cervix being entirely destroyed by a hard mass which extended far out into each broad ligament. Hemoglobin was 56%.

Operation.—The technique most recently advocated by Percy was followed in every detail. Midline incision and ligation of both internal iliac arteries and both infundibulo-pelvic ligaments. A Percy cautery (Point "A") was introduced into the uterine cavity for an hour at a temperature low enough to avoid all charring. A Percy cautery (Point "E") was then introduced for one half hour each into the right and left broad ligaments, respectively. Acute gastric dilatation, a urinary fistula and a paralytic ileus followed operation, and the patient died suddenly during preparation for enterostomy.

Autopsy.—Peritoneal cavity contained 100 c. c. of serosanguineous fluid. Extensive pulmonary edema. Stomach mucosa was perforated by about 24 clean, round ulcers from 1 to 7 mm. in diameter. Microscopically the loss of substance extended to the submucosa and was unassociated with any cellular change. Operative site extensively softened. Grossly and microscopically intact squamous cell carcinoma was found peripheral to large areas of general necrosis.

Thyroid Tumors of the Bones. By J. Philip Kanoky, Kansas City, Mo., Surgery, Gynecology and Obstetrics, June, 1916, p. 679.

Special reference is made to non-malignant tumors of the skull.

From the literature the majority of investigators conclude that primarily all metastatic thyroid tumors are histologically benign.

Metastatic tumors can result from small particles of thyroid tissue which have found their way into the circulatory apparatus and lodged in the cellular structure of the bone.

Mechanical disturbance of the thyroid gland, aside from radical surgical interference, may be a causative agency in liberating thyroid cells that may find favorable soil in the bone for development.

In many cases of thyroid metastases there is no hyperthrophy or apparent pathological condition of the thyroid gland.

The malignant character of some of these tumors is due to some secondary influence possibly engendered by the thyroid cell acting as a focus.

The theory of misplaced embryonic thyroid cells is tenable and may be a factor in the production of thyroid metastases. The growth of such cells outside of its direct environment is made possible by some peculiar systemic condition as yet unknown.

Observation on Fissure in Ano. Rollin H. Barnes, St. Louis, Mo. Read before American Proctologic Society, Detroit, Mich., June 11-12, 1916.

The author considers fissure as an ulcer and believes that traumatic causes are not true etiological factors in the production, but it is necessary that the tissues become inflamed and hence friable and thus easily torn in order that fissure be formed. He believes that catarrhal inflammatory conditions are frequently the result of an excessive carbohydrate diet and sometimes an excessive fat diet.

In the treatment of fissure he recommends palliative measures by correcting the excessive diet with reference to carbohydrates and fats, and placing the patient upon a protein diet for a time. When operation is necessary (which is seldom) he believes that the object should be drainage rather than paralyzing the muscular fibers. He also advocates the use of a small (pint) enema before defecation in order to avoid irritation from the stool. It is very important to keep the wound clean by hot sitz baths and the hot enema, in order that any foreign substance may not remain in the wound.

EYE, EAR, NOSE AND THROAT

THE NERVO-MUSCULAR MECHANISM OF THE EYES*

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In the study of the motility of the eyes, there are fundamentals that must be known and appreciated in order that the subject may be clearly understood. These fundamentals may be briefly stated as follows:

1. The image of the object on which the vision is to be fixed must lie on the macula.

2. The line connecting this image and its object must be a straight line passing through the center of the retinal concave.

3. Every other object in the visual field and its image must, likewise, be connected by a straight line passing through the center of the retinal concave.

4. All visual lines, whether direct or indirect, are radii of the retinal curvature prolonged, and hence each visual line must cross all other visual lines at the center of the retinal concave.

5. Any two objects in viewable space bear the same relationship, in degrees, as do their retinal images.

6. The direct or primary line of vision is the visual axis which starts from the central part of the macula, while all other visual lines are indirect or secondary.

7. Any secondary point in space may become the point of direct view by a shifting of the visual axis into the position of the secondary visual line which connected that point with its image before the rotation began, which is possible only because the rotation is around that point through which all visual lines pass, the center of the retinal concave, which is the center of rotation.

Only on the conceptions stated above can be formulated the true mental law of visible direction. *"All lines of direction are radii of retinal curvature prolonged."* In the light of this law all ocular rotations can be understood; but, before studying these rotations and the means by which they are accomplished, some essential physical properties of the globe must be set forth. The poles of the eye must be correctly located; the meridians must be properly constructed; and the equator must be fitly related to the poles. The fatal mistake of Helmholtz, in his chapter on "Movements of the Eyes," was in his not making the central point of the macula always the posterior pole of the eye. He fell into this error because he chose, as the location of the anterior pole of the eye, the center of the corneal curve. His optic axis he constructed by carrying a line from his supposed anterior pole back through the center of rotation to the retina, and named the retinal end of that line the posterior pole. Confessing, as he did, that in ideal eyes the posterior pole and the central point of the macula were one and the same, he gave himself the opportunity to rid himself of his error in locating the poles. That he did not do this is explainable only on the ground of his false conception of the law of visible direction which may be expressed in these words: *"All lines of direction are axial rays of light and cross each other at the nodal point."* His conception of the law of visible direction and his location of the poles of the eye made his location of the equator incorrect and his construction of the corneo-retinal meridians wrong.

With the center of the macula as the posterior pole of all eyes, the anterior pole may, or may not, be the center of the cornea. It is the center of the cornea only in ideal eyes. Through the true posterior pole of the eye all retinal meridians pass. Therefore, the center of the macula is common to all the retinal meridians. The only other point through which these meridians can pass is the anterior pole,—the second common point for all meridians. The only line common to the planes of all the meridians is the line connecting the two poles, the visual axis which, in all eyes, is the true optic axis.

*Read in Eye, Ear, Nose and Throat Section, Southern Medical Association, Ninth Annual Meeting, Dallas, Tex., Nov. 8-11, 1915.

The equator of the eye is that circle which passes around the eye, equally distant, everywhere, from the two poles. Its plane cuts the center of rotation and is at right angles to the planes of all the meridians. In the plane of the equator there lie as many diameters as there are meridional planes; but only two of these demand any study. These two diameters lie, respectively, in the planes of the vertical and horizontal meridians, as well as in the plane of the equator. It is around one or both of these diameters, as axes, that all possible ocular rotations must take place. The line to be guided by the muscles and nerves of the eye, in any rotation, is common to the planes of both the vertical and horizontal meridians, which has already been shown to be the visual axis,—the true optic axis,—around which rotations are denied, except in natural or artificial oblique astigmatism.

In space, just as in the eye, there are points and lines, both straight and curved, to be known in order to arrive at a correct understanding of ocular rotations. One of these lines is the visual axis extended, on which must lie any object to be looked at fixedly. The location of such an object or point is the spacial pole of the eye. While the anterior and posterior poles of the eye have a fixed distance between them and can not vary their distance from the center of rotation, the spacial pole may be at any distance from the two ocular poles and from the center of rotation. Through the spacial pole of an eye pass spacial meridians, which are great circles concentric with the retinal meridians. The planes of the vertical and horizontal retinal meridians prolonged into space become the planes of the vertical and horizontal spacial meridians. The planes of all oblique retinal meridians bear a like relationship to the oblique spacial meridians. No point can be in viewable space which does not lie on some spacial meridian, and the eye is so constructed, as to its refractive power, as to compel the image of that point to fall on the retinal meridian having a common plane with the spacial meridian. Such a point in space, if secondary, is just as far removed, in degrees, from the spacial pole as its image is removed from the central point of the macula. The line connecting the secondary point and its image forms its two angles with the visual axis at the center of rotation, which angles are equal because opposite.

The spacial equator is in the plane of the equator of the eye, but the former varies in size, always corresponding with the spacial meridians both as to size and as to its distance from the center of rotation. Any number of small spacial circles may be constructed parallel with the spacial equator and between it and the spacial pole, their diameters growing shorter and shorter as they proceed from the equator toward the pole, reaching zero at the pole. For convenience of study, these spacial parallels may be placed 10° apart, the point of starting being the spacial pole. Likewise retinal parallels might be constructed 10° apart, the smaller one being 10° from the posterior pole of the eye. Since the spacial meridians correspond with their respective retinal meridians, point with point everywhere, a spacial parallel at a given distance from the spacial pole must correspond everywhere with a retinal parallel located the same number of degrees from the posterior pole of the eye.

With the foregoing facts fixed in the mind, monocular rotations ought not to be difficult to understand. In monocular rotation every rotation plane is a meridional plane extended, and in the spacial part of this plane lie both the first and second points of view, while, in its retinal part, lie the images of the two points. The first point of view must be at the spacial pole and its image must be on the central point of the macula; the second point of view must be just as many degrees from the spacial pole, on a given spacial meridian, as its image is removed from the retinal pole, on the corresponding retinal meridian. The change from the one point of view to the other is but a shifting of the visual axis in the plane common to the following five points: the first and second points of view, their two retinal images, and the center of rotation. In the shifting the spacial end of the visual axis moves from the primary to the secondary point, while the retinal end moves from the primary to the secondary

image, the motion being around the central point of the retinal concave, which is also the central point of the spacial concave.

Every pair of eyes, endowed with the possibility of binocular single vision, can be made to fuse their respective spacial fields into a single binocular spacial field, with a binocular pole, meridians and parallels. The fundamental fact of binocular single vision is common brain cell connection; that is, each visual cell is diaxonic, one axone going to a point in one retina,while the other axone goes to a point in the other retina; and thus is created corresponding retinal points. Without such common brain cell connection, the binocular spacial pole, meridians and parallels would be impossible, for there could be no corresponding retinal points. This condition is not uncommon, and over such eyes the law of binocular rotations has no power.

Ocular rotations, whether monocular or binocular, can not be understood except in the light of the two planes of reference shown in Fig. 4 of Chart 1. These two planes are the fixed vertical and horizontal planes of the head, the one, *g-h-i-j*, being half-way between the centers of the two eyes, the other, *a-b-c-d*, cutting the centers of the two eyes. As their names imply, these two planes are at right angles to each other. The other plane, *k-l-m-n*, shown in Fig. 4, is Listing's plane, which is neither a plane of reference nor is it a plane containing the axes of rotations, as was once taught. The line *e-f* is made by the intersection of the two planes of reference. From the point *f* may be studied the four cardinal directions, *c* and *d*, directly to the left and right, in the horizontal plane; and *i* and *j*, directly above and below, in the vertical plane. Points not in one or the other of these planes are obliquely related to the line of their intersection. The shifting of the visual axes in either one of these planes is the result of a cardinal rotation; when the visual axes are made to move out of these planes, the rotation is oblique. Fig. 1 in Chart 1 represents a horizontal cardinal rotation; Fig. 2 represents a vertical cardinal rotation; while Fig. 3 represents an oblique rotation. To this chart and these figures reference will again be made after a study of the ocular muscles and the nerve centers controlling them.

The ocular muscles, as to their origin, course and insertion, or attachment to the eye, are too well known to require study here. The six muscles of each eye are divisible into three pairs as follows: (1) the externus and the internus; (2) the superior and the inferior recti; and (3) the superior and inferior obliques. If there were but one eye, the posing of the head would make it unimportant to study the first and second grouping; but the third grouping, even then, should not be ignored, for the reason that no posing of the head would greatly help them, if unbalanced in tonicity, in their work of always keeping the vertical axis of the eye parallel with the median plane of the head.

In this grouping the two muscles of a pair are related to each other as to tonicity and not as to contractility. Hence each pair should be studied when neither muscle is under the active control of any brain center. Such study is impossible, if there is but one eye. Fortunately it is a matter of no consequence, when there is but one eye, whether the first or the second pair are equal or unequal in tonicity. In binocular vision it is of immense importance to know if the two muscles of any one of the three pairs are of equal or unequal tonicity; that is, are they orthophoric or heterophoric? This, as to the recti, best can be answered only when the two eyes are dissociated in action by means of the monocular phorometer; and as to the obliques, when they are dissociated by means of the cyclophorometer. The oculist who neglects such a study of the ocular muscles is unjust to himself and cruel to his patients.

Great as is the temptation to enter here into a full study of this feature of muscle problems, I must not yield, as time will not allow. I have heard otherwise well-informed men boast of their ignorance of heterophoric conditions; but that boast would not now be a badge of respectability.

In our study of Chart 2 we will see the wonderful provision in the brain for the

Fig. I.

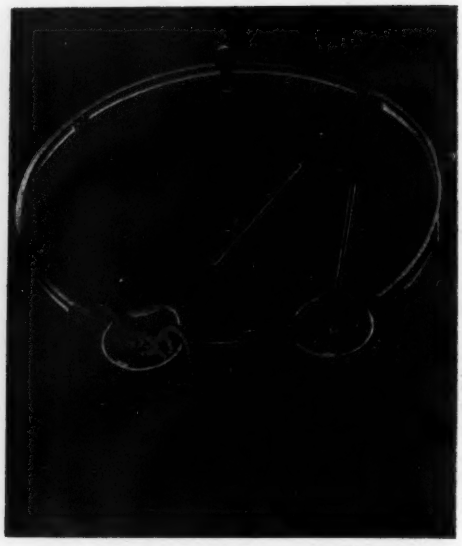

Fig. III.

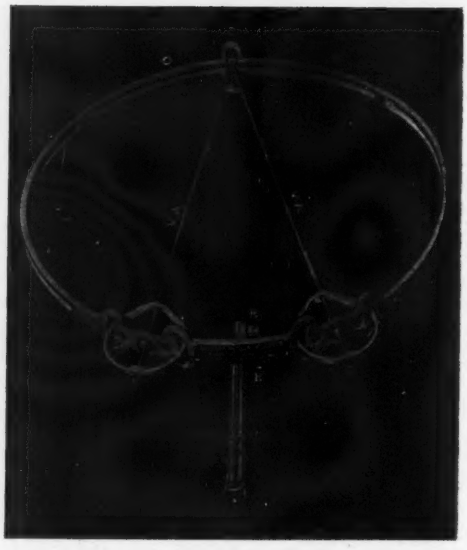

Fig. II.

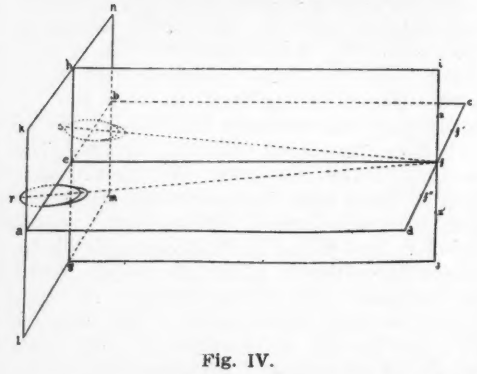

Fig. IV.

helpfulness of eyes, in the work of binocular single vision, whose muscles, in one or all of the three pairs, are heterophoric.

In the next grouping of the ocular muscles in pairs, the one muscle of every pair will belong to one eye while the other muscle of the pair will belong to the other eye. In this grouping the muscles will be studied in action and not in a state of rest. There are nine pairs: (1) the two superior recti for rotating the two eyes directly upward; (2) the two inferior recti for rotating the two eyes directly downward (these two rotations will be around the horizontal axis of the eye, but with torsion which must be prevented by associated action of two pairs of the obliques); (3) the two interni for converging the eyes on an object near by (without torsion if the near point be in the extended horizontal plane of the head); (4)

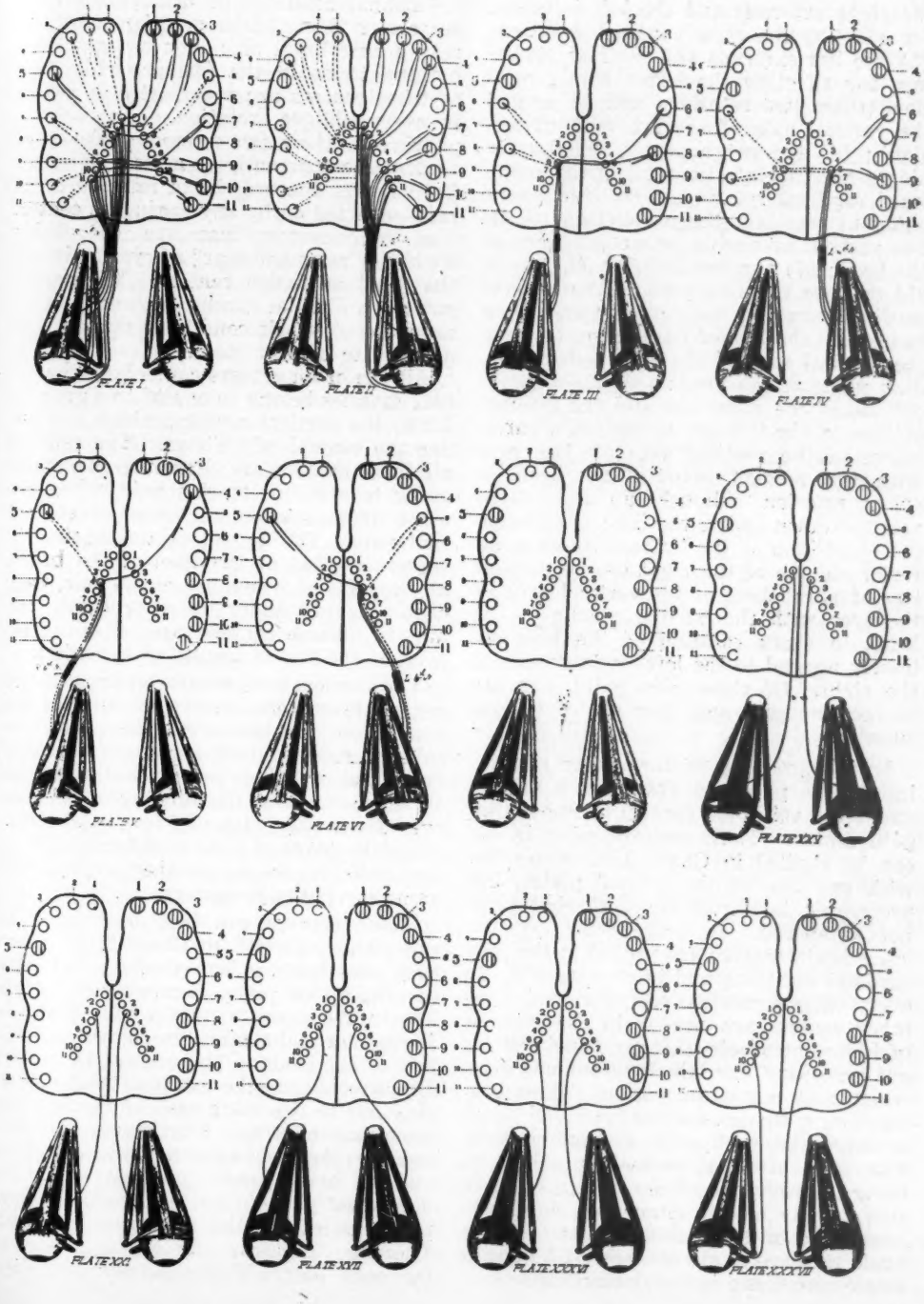
PLATE I
PLATE II
PLATE III
PLATE IV
PLATE V
PLATE VI
PLATE XXI
PLATE XXV
PLATE XVII
PLATE XXXVI
PLATE XXXVII

the right externus and the left internus, for effecting the right cardinal rotation; (5) the left externus and the right internus, for effecting the left cardinal rotation (these two rotations will be around the vertical axis of the eye without torsion); (6) the two superior obliques for aiding the two inferior recti in the downward cardinal rotation, their chief work being to maintain the parallelism of the two vertical axes with the median plane of the head; (7) the two inferior obliques to aid the two superior recti in the upward cardinal rotation, their chief work being to prevent the loss of parallelism between the vertical axes of the eyes and the median plane of the head; (8) the superior oblique of the right eye and the inferior oblique of the left eye to maintain parallelism of the vertical axes of the eyes with the median plane of the head, in every rotation obliquely up and to the right or down and to the left; (9) the superior oblique of the left eye and the inferior oblique of the right eye to prevent loss of parallelism of the vertical axes of the eyes with the median plane of the head, in every rotation of the eyes obliquely up and to the left or down and to the right. Of these nine pairs, five are of recti muscles and four are of oblique muscles.

In the grouping of the ocular muscles into active pairs, as above, each pair is under the volitional control of one conjugate center. These centers, nine in all, can be studied in Chart 2 in connection with any one of the several plates, but preferably in connection with that plate not numbered. In orthophoric eyes no other brain centers are needed in the four cardinal rotations and in convergence. In every oblique rotation of orthophoric eyes other centers are needed in the interest of binocular single vision. These centers are necessary for all heterophoric eyes, whether at rest or in motion. These centers are at the base of the brain, and each is connected with only a single muscle. They are, therefore, twelve in number, six being on each side of the brain. The fusion faculty of the mind—not volition—presides over these centers and they are made to serve in the interest of binocular single vision and correct orientation.

Cardinal rotations of orthophoric eyes are easier than oblique rotations, for the reason that basal or fusion centers have nothing to do in the former, while two of these centers are necessarily in action in every oblique rotation. In heterophoric conditions, two or more of the basal centers are constantly in a state of activity, whether the eyes be in rotation or at rest—unacted on by any conjugate center. The brain centers that are chargeable with the "wear-and-tear" of eye strain are the basal or fusion centers. The conjugate or volitional brain centers neither cause heterophoric conditions nor do they attempt to correct them.

All the brain centers controlling the ocular muscles belong to one of two groups: First, the cortical centers, which are under the control of volition. The cells of all these centers are diaxonic, one axone going to one muscle of a pair, while the other axone goes to the other muscle of that pair. The second group consists of centers located at the base of the brain, all the cells of which are monaxonic, each center having under its control only one muscle. These centers are all presided over by the fusion faculty of the mind.

The cortical centers are properly called conjugate centers, since each directs the rotation of the two eyes. They are also called verting centers, since it is neuricity from one or other, or at most three, of these, that causes the turning of the two eyes from one point of view to another. Since the point of view is changed only as one wills to do so, another appropriate name is volitional centers.

These centers can best be studied in the plates collected in Chart 2, in which they are shown schematically. Take the uncomplicated plate, unnumbered, at the left in the lower row, for this purpose. Eleven cortical centers are shown on each side of the brain. The centers 10 and 11 do not belong to the extrinsic ocular muscles, but to the sphincters of the iris and the ciliary muscles. That leaves nine centers for the recti and the obliques. This number corresponds precisely with the number of pairs into which we have found the muscles of the two eyes grouped. There is, therefore, one conjugate center for each pair. These centers and their

respective pairs of muscles are numbered in harmony in order to make their study most easy.

A glance at the unnumbered plate will show eighteen conjugate centers, nine of which are represented by large circles, while the remaining nine are represented by small circles. Eight of the nine large circles (1 to 9, except 5), in this and in all the plates in Chart 2 are in the left side of the brain, while the remaining large circle (5) stands alone in the right side of the brain. The large circles represent the active conjugate centers in control of the nine pairs of extrinsic ocular muscles. The other nine circles, eight of which (1 to 9, except 4), are in the right brain, while the other one (4) is in the left brain, represent the conjugate centers that would have controlled the nine pairs of the extrinsic ocular muscles, if the cause determining which group of nine centers should be active, had been in their favor.

At birth every one of the eighteen conjugate centers (1 to 9 on each side) stands equally ready for action, and the diaxones of all the cells of all these centers enter into the formation of the three pairs (third, fourth and sixth) of motor nerves, by means of which the muscles are connected with their respective centers. One-half of these axones are to be forever inactive, as if dead wires, for the nine centers from which they go will never become generators and dischargers of neuricity.

The cause that determines which nine conjugate centers shall have control of the extrinsic ocular muscles (also determining whether the right or left tenth and eleventh conjugate centers shall control the ciliary muscles and the pupil contractors) is anatomic. If the diaxonic visual cells connected with the two maculas are located in the left cuneus, all the active conjugate centers, except the fifth, will be in the left brain, as shown in all the plates of Chart 2. The same condition also predetermines the location of the active speech center in the left brain. Such a person is predestined to be right-handed; and the higher faculties of his mind will use only the left side of the brain. The reverse of all this would be true if the diaxonic visual cells connected with the two maculas were located in the right cuneus. In such a person the only active conjugate center in the left brain would be the fourth. The left fourth and the right fifth conjugate centers are always active, whether the person be right- or left-handed.

The fusion centers, twelve in number, one for each ocular muscle, exist in the interest of binocular single vision. All these are ready for action at birth, and each one always remains ready to store and discharge neuricity to the muscle to which it belongs when that muscle must contract in order that diplopia may be prevented, and orientation may be correct. In orthophoric eyes oblique rotations could not be accomplished, and single vision be maintained, without the aid of two of the twelve fusion centers. In heterophoric eyes there would be diplopia whether the eyes were at rest or in motion, were it not for these fusion centers. The nature of the imbalance determines which of these centers shall be in constant action — in esophoria, the right and left fourth; in exophoria, the right and left third; in left hyperphoria and right cataphoria, the right first and the left second, and so on. Imbalance of each of the three pairs of muscles would keep in constant activity six of the twelve basal centers. Untreated heterophoria means perpetual action of two or more of these basal centers, during all waking hours, and in both distant and near seeing. Such centers and their respective muscles get no rest except in sleep, or when one eye is covered or voluntarily closed. In lateral heterophoria a posing of the head may bring rest to one basal center, but it will demand greater activity on the part of the other one, whether these centers be the right and left third or the right and left fourth basal centers.

It is no longer any wonder that many people, who have lost one eye, claim that the remaining eye is stronger than the two eyes ever were. Such people were heterophoric and their fusion centers had no longer any occasion for either storing or discharging neuricity, after the loss of one eye.

Conjugate centers, as already stated, are never called on for the correction of heterophorias, for this must be done by

the fusion centers. There are conditions, however, that make excessive demands on the conjugate centers. These conditions can only be named here: asthenic orthophoria and asthenic heterophoria of whatever kind. Sthenic orthophoria and the sthenic heterophorias make less than the normal demand on the conjugate centers.

In the following study of the structure of the three pairs of motor nerves of the eyes, these must be considered as belonging to a person who is right-handed, whose macular connections are all in the left brain. Plate 1 shows that conjugate centers 1, 2, 3, 7, 9, 10 and 11, in the left brain, send forth their fibers across the median line to help form the right third nerve, and that conjugate center *5* in the right brain sends direct fibers to help form this nerve. Only half the axones from these eight conjugate centers are thus directed. The other half of the axones from the centers named, except the fifth, enter into the formation of the left third nerve (See Plate 2), and in this nerve will be found half the axones from the left fourth conjugate center. None of the fibers, or axones, forming the left third nerve have crossed from the opposite side of the brain. The balance of the right third nerve is formed by all the single axones of right basal centers *1, 2, 3, 7, 10* and *11;* and the balance of the left third nerve is composed of all the fibers from the left *1, 2, 3, 7, 10* and *11* basal centers. Thus, it will be seen, that each third nerve is composed of half the fibers from eight conjugate centers and all the fibres from six basal centers.

The construction of the fourth pair of nerves is very simple, as shown in Plates 3 and 4 of Chart 2. The right fourth has in it half the axones from the left six and eighth conjugate centers and all the axones from the right sixth basal center. The left fourth nerve is composed of half the axones from the left sixth and ninth conjugate centers and all the axones from the left sixth basal or fusion center. All the volitional fibers of the right fourth nerve have crossed, as shown in Plate 3; while none of those forming the left fourth nerve, as shown in Plate 4, have crossed.

The construction of the sixth pair of nerves is still less complicated. Plate 5 shows the right sixth nerve composed of half the axones from the left fourth conjugate center and all the axones from the right fourth basal or fusion center. Plate 6 shows the left sixth nerve composed of half the axones from the right fifth conjugate center, and all the axones from the left fourth basal or fusion center. All the voluntary fibers found in either of the two sixth nerves have crossed on their way from center to muscle. None of the fusion fibers of any one of the three pairs of motor nerves have crossed to the opposite side. All the fibers or axones entering into the formation of these nerves are insulated from their starting point, the central cell, to their termination in the muscles, so that the neuricity generated by these cells may not be dissipated when discharged to the muscles for controlling them in their action.

The active fusion centers in the several forms of heterophoria are shown in five of the plates in the lower row of Chart 2. The unnumbered plate, to the extreme left in this row of plates, shows the fact that, in orthophoria, there is no excitation of either conjugate or fusion centers when the point of view is straightforward and, practically, at infinity. Both brain rest and muscle inaction are shown in this plate by the absence of all connecting fibers.

Plate 25 shows the two fusion centers that must be unremittingly active in left hyperphoria and right cataphoria. These are the right first and left second fusion centers acting, respectively, on the right superior and left inferior rectus. If the condition were right hyperphoria and left cataphoria, the excited fusion centers would be the left first and the right second, and the constantly contracting muscles would be the left superior and right inferior recti.

Plate 21 shows the excited fusion centers and the contracting muscles in exophoria, while Plate 17 shows the overworked fusion centers and their respective muscles in esophoria. Plate 36 illustrates the brain and muscle activity in plus cyclophoria, while Plate 37 shows the fusion centers and the two muscles which are in constant action in minus cyclophoria. These heterophorias successfully treated

by operation or other means would give to brain centers and muscles the restful state shown in the unnumbered plate. Untreated, the wear-and-tear of brain and muscles must go on to the end of life.

Before closing with the study of rotations, the muscles and brain centers concerned in each, the laws of motion must be given.

LAW OF MONOCULAR MOTION

The law governing monocular rotations may be formulated as follows:

"*(1) The visual axis, which is the line of intersection of the planes of all meridians, must be rotated in the plane of that meridian on which lie the first and second points of view and their retinal images.*

"*(2) In the plane of the horizontal, or that of the vertical meridian, the rotation must be effected around a single fixed axis, at right-angles to the rotation plane and cutting it at the center of rotation — if in the horiontal plane, around the vertical axis of the eye; if in the vertical plane, around the transverse axis of the eye.*

"*(3) In the plane of an oblique rotation, whatever the degree of obliquity, the rotation must be accomplished around two moving axes by two forces acting simultaneously, these axes being the transverse and vertical axes, both at right-angles to the visual axis, but neither one at right-angles to any oblique rotation plane; while a third force prevents any rotation around the visual axis.*"

The law of monocular motion, since binocular vision is not in consideration, is accomplished without any demand on the fusion centers, just as in monocular rest there is no such demand.

In binocular rotations each eye must obey the law of monocular motion, but the two together must obey *the law of binocular rest and motion. "The twelve extrinsic muscles of normal eyes, under the control of the nine conjugate and the twelve fusion brain centers, must so relate the two eyes that their two visual axes and the two horizontal retinal meridians shall always lie in the plane of the primary isogonal circle, whether at rest or in motion, and that the two visual axes shall converge at some point on this circle, in the interest of both binocular single vision and correct orientation.*"

Binocular rotations can best be studied in the light of Fig. 4 in Chart 1. In this study the two eyes will be considered as orthophoric. The line *e-f* of intersection of the two planes of reference is the line on which every object or point must be located which is to be considered the primary point of view. If this point is at infinity, the conjugate and the fusion brain centers and all the ocular muscles are in a state of rest. If the point is near by, only two extrinsic muscles (the interni) and one conjugate brain center (the third) are in action.

Objects or points in space not on the line *e-f* are secondary points of view. If these points are in either the horizontal or the vertical plane of reference, they are cardinally related to points on the line *e-f*. Points not in either of these planes are obliquely related to their line of intersection, *e-f*.

The points *c* and *d* are in the horizontal plane with *f*. In moving the visual axes from *f* to *d*, the fourth conjugate center and the right externus and left internus are active, and each eye is rotated around its vertical axis. All other centers and muscles are at rest in this rotation. In moving the visual axes from *f* to *c* the fifth conjugate center sends neuricity to the left externus and right internus. In cardinal rotations, right or left, only two muscles are called into action by only one conjugate center. The right rotation is shown in Fig. 1, Chart 1.

Points *i* and *j* are in the vertical plane of the head with point *f*. In rotation of the visual axes from *f* to *i* two pairs of muscles and two conjugate centers will be called into action by the will. One pair of the muscles is the two superior recti and the other, the two inferior obliques. The centers calling these muscles into action are, respectively, the first and seventh conjugate centers. This rotation is shown in Fig. 2. The rotation from *f* to *j* would be effected by the two inferior recti and the two superior obliques, under the influence, respectively, of the second and sixth conjugate centers. In both of these cardinal rotations of orthophoric eyes, all other ocular muscles and brain centers,

not named in that connection, are at rest. These rotations are around the horizontal axis of the eye.

A point anywhere above the horizontal plane and to the right of the vertical plane, obliquely related to point *f*, can be reached by the two visual eyes only by the harmonious action of three pairs of muscles—the two superior recti, the right externus and left internus, and the right superior oblique and left inferior oblique—and by three conjugate centers, respectively, the first, the fourth, and the eighth. All other muscles and conjugate centers are inactive. Two fusion centers, the right first and the left third, must aid in this rotation. This rotation, as shown in Fig. 3, and all other oblique rotations are effected around two moving axes, the vertical and horizontal axes, by means of three pairs of muscles acted on by their respective conjugate centers, aided by two fusion centers. The rotation shown in Fig. 3 is an example of all oblique rotations.

All oblique rotations are around the same two axes, each moving as the eye rotates around the other. These two axes are the vertical and horizontal axes of the eyes, and these are the axes of the four cardinal rotations, though in either of the latter there is but one axis and it is fixed throughout the given rotation.

The aim of the treatment of all forms of heterophoria is to make it easy for the eyes to obey the law of binocular rest and motion.

FOREIGN BODIES IN THE ESOPHAGUS AND AIR PASSAGES*

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Professor Gustav Killian, of Freiburg, was the first to remove a foreign body from the bronchus by upper bronchoscopy, and who through his writings and demonstrations made bronchoscopy available to every laryngologist throughout the civilized world. Dr. Ingalls was one of the first Americans to adopt bronchoscopy. Of the Americans, Dr. Chevalier Jackson, through his ability as an author and skillful operator, has contributed most toward the development and advancement of per-oral endoscopy and laryngeal surgery, of which the progress made during the past ten years compares favorably with the general progress made in other branches of medicine and surgery.

The Killian tubes or modifications and Jackson's tubes represent the two types of tubes in general use. We have and use both tubes, as each has certain advantages. For more complete description of instruments, operative technique and bibliography we respectfully refer you to Jackson's "Per-Oral Endoscopy and Laryngeal Surgery."

Foreign bodies in the air passages and esophagus are most frequent in infants and young children, as they seem to have a natural desire to test all things with their mouths. Attempts to swallow, laughing, coughing or crying draw the foreign body into the air tract or esophagus. The smaller calliber of larynx tubes, etc., of children renders the liability to lodgment of foreign bodies greater in children than in adults with obstruction and danger correspondingly greater. The nature of foreign bodies may be limited in size (because of the mouth), but not in variety.

SYMPTOMS

Symptoms of a foreign body in the respiratory tract are those of obstructed breathing, laryngeal, tracheal, bronchial or pulmonary irritation and inflammation. The patient is suddenly seized with a fit of violent choking, coughing and suffocation, evidenced by cyanosis, aphonia, heavy perspiration, weak pulse, etc., all of which subside within a few minutes to return again in a few hours or days. In time the spasmodic symptoms cease, to be followed possibly by a constant cough or other evidence of bronchial or pulmonary involvement, and in this way may not infrequently lead to misdiagnosis of pulmonary tuberculosis. Negative findings upon microscopic examination and other laboratory tests may exclude T. B., but positive findings do not exclude the presence of a foreign body. Therefore, in all

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cases of a chronic cough, etc., with bronchial or pulmonary involvement, in which the cause is the least obscure, X-ray examination and other steps to exclude the presence of foreign bodies are indicated.

Dyspnea attended by elevation of temperature may lead to an erroneous diagnosis of membranous croup, laryngeal or tracheal diphtheria. In children, a history of spasmodic cough, dyspnea, etc., followed by chronic cough, should excite suspicion of a foreign body. All cases of so-called asthma in children should lead one to suspect and exclude the presence of a foreign body. Should the foreign body lodge in the ventricle of the larynx or subglottic space, there follows some interference with voice production. While if it lodges in the trachea, bronchus or bronchioles, the voice remains clear. A foreign body lodging in the esophagus may, through pressure, interfere with respiration, etc., and thus prove misleading in diagnosing. Or, on the other hand, the symptoms may vary from no inconvenience to various degrees of pain and esophageal obstruction. In all cases of doubt the patient should, if possible, be sufficiently examined to exclude the presence of a foreign body. In cases of known foreign body in the esophagus or air passages, it should be removed, as the danger of operative procedure in the hands of the operator of average skill and experience is far less than that of letting the foreign body remain. This danger as well as the difficulty of removal increases in direct ratio to the delay.

TECHNIQUE

In brief, we to a large extent follow the technique of Dr. Chevalier Jackson. When possible, indirect laryngeal examination should precede other methods. We prefer X-ray examinations in all cases. In cases in which the ray reveals the foreign body, we find that the combined use of the fluoroscope with illuminated tubes aids greatly in the operation. Per-oral endoscopy should be preferred. If this fails, then tracheotomy and the lower bronchoscopy should be employed. Short and repeated sittings are preferred to prolonged examinations. Be sure the foreign body is not in the larynx or upper portion of the trachea before entering the bronchus. We prefer the patient upon the table with the head and shoulders slightly lower than the body in order to gain advantage of gravitation. No anesthetic is used in young children and only a local anesthetic in older children and adults, except in esophageal examinations, especially in muscular adults, when we find a general anesthetic (ether preferred) renders examination much easier.

We wish to report herewith nine cases coming under the care of my associate, Dr. H. T. Aynesworth, and me during the last year, and two previous cases selected because of peculiar interest.

Case No. 1.—Jan. 20, 1915, Dr. C. W. Davis, of Waco, brought to us the little daughter of Mr. R. L. C., white girl, eighteen months of age, with a history of having choked an hour or so before, presumably from a breastpin about the size of a twenty-five cent piece. Dr. R. B. Nutter immediately made a fluoroscopic examination, locating the pin in the esophagus about the level of the fourth dorsal vertebra. With the assistance of Drs. Aynesworth and Davis and the nurse, we wrapped the child in a sheet, placed it in a straight position on the table, and introduced a Jackson's tube with ease. But in the attempt at removal, the pin was dislodged, passed readily into the stomach, as was proved by the fluoroscope, and was recovered from the stool thirty-six hours later.

Case No. 2.—Jan. 22, 1915, Dr. Aynesworth and I saw in consultation with Dr. A. M. Curtis, of Waco, and Dr. Craven, of Elm Mott, the five-year-old son of Mr. W. T. R., with a history of having aspirated a bull nettle three months previously. The patient was anemic and emaciated. The temperature was 101° and there was cough. The lungs were waterlogged with a solidified area in the right lung. Dr. Craven said the patient was recovering from a severe pneumonic condition followed by multiple abscesses. Fluoroscopic examination by Dr. R. B. Nutter showed considerable involvement of the right lung—of course not showing the bull nettle, it being of vegetable substance. Dr. Aynesworth and I advised operation, but consulting physicians did not agree with us. The patient died six weeks later as the result of multiple abscesses of the lungs.

Case No. 3.—July 12, 1915, Dr. J. R. Maxfield, of Waco, brought to our office for consultation, the four-year-old daughter of Mr. W. F. T., with a history of having had a nickel in the esophagus for about ten days. Fluoroscopic examination by Dr. Nutter located the nickel in the esophagus about at the level of the third dorsal vertebra. Under ether, Jackson's esophagoscope was introduced and the esophagus examined without finding the coin. On the following day, the child

was again fluoroscoped, showing the nickel in the same position. The patient was returned to the Providence Sanitorium; and ether was administered by Dr. M. E. Colgin. Dr. I. E. Colgin used the fluoroscope while we introduced Jackson's esophagoscope, and, guided by the fluoroscope, passed the tube in until it reached the nickel. But we could not see the five-cent piece through the tube. So with forceps inserted and by gently smoothing out the fold of membrane covering the coin, which was then in perfect view, there was no trouble in grasping and removing the foreign body. The patient had no further trouble.

Case No. 4.—In the afternoon of July 18, 1915, Dr. Germany, of Speegleville, brought to us Mrs. B. F. C., white, age 28, who while walking through a field of grass, attempted to remove a grass bur from her finger by using her lips, when it passed into the larynx, lodging anteriorly between the vocal cords. Of course, she could not speak and had decided interference with her respiration. We saw her about two hours after the accident, and through the direct laryngoscope passed forceps and removed the bur without crushing it. Relief was immediate and recovery uneventful.

Case No. 5.—Dr. Colgin referred to us Baby Robert Lee W., white, male, age nine months, with a history of having become choked and cyanotic about noon while on the floor playing with a bunch of loose glass beads and China berries. We took the child to the Providence Sanitorium where, without an anesthetic, with the infant wrapped in a sheet and on the table, we passed in a bronchoscope endoscopically and expected the bead to be in the right bronchus. When not found in the trachea, we examined thoroughly the right bronchus. Not finding it there, we passed it into the left bronchus, locating a China berry at the second bifurcation and completely blocking both bronchi. Making an attempt to remove it without success, we sent the patient to the room. Two hours later baby's breathing was so labored that we intubated, thinking the bad breathing was caused by edema of the larynx, though I am now of the opinion that it was due to an accumulation of mucus in the lungs and that intubation was possibly contraindicated. The tube was removed the next day, August 18. On the morning of the 18th, X-ray examination showed a blocked condition of the left lung; the right lung being very clear. Temperature ranged from 100 to 101°. Slept at intervals; crying and restless at times; breathing disturbed; temperature gradually rising to as high as 105°. Respiration fifty to sixty and pulse around 160. Aug. 19, A. M., the patient was sent to the operating room; and the tube was introduced endoscopically. Breathing was so distressed that we removed the tube and performed a tracheotomy followed by lower bronchoscopy. After sponging out the mucopurulent secretion, the berry was located wedged in left bronchus at the third bifurcation, the swollen membrane almost covering the berry. After repeated attempts to remove the berry, and having gotten only a portion of the hull, we gave up the attempt; putting in place a tracheotomy tube. For the next several days the temperature remained around 102 to 103°, the child being fairly well nourished, circulation good and breathing improving. Kidneys and bowels acting very well. Only treatment was gr. 1/1800 atropin at six- to ten-hour intervals as indicated. Ice cap and sponge as needed for temperature. Aug. 23, had hemorrhage from lungs. Breathing better for some time afterward. Aug. 24, had severe hemorrhage from lungs and died. We could not remove this berry with the instruments we had. Possibly we might have been more successful had we had one of Jackson's mechanical spoons, but it is hard to appreciate the difficulty of attempting to remove a round and very slick article tightly wedged in a swollen tube, naturally so small that you could not get close to it with a 4 mm. tube. Drs. Colgin and Colgin and Dr. R. J. Alexander, of Waco, were associated with Dr. Aynesworth and me in this case.

Case No. 6.—Sept. 10, 1915, we met Dr. H. F. Connally, of Waco, in consultation. Patient a male, white, five-year-old son of W. C. W., of Moody, Tex. History: Six weeks previously, while eating chicken, he became choked, etc ,from aspiration of a small chicken rib. He was taken to a brother laryngologist in a neighboring city, where, according to report of the patient's father and the doctor, X-ray examination followed by tracheotomy and lower bronchoscopy were done without locating or removing the bone. Pneumonia followed. On examination we found the child with tracheotomy wound open. When this was closed the breathing appeared about like that of a child with a bad case of laryngeal diphtheria. So we concluded that the obstruction must be above tracheotomy wound. Fluoroscopic examination by Dr. R. B. Nutter showed both lungs in similar condition and reasonably clear, with nothing to indicate a foreign body in the lung for so long a period. Although the child had lunch three hours earlier, we put it in a straight position on the table and with a direct laryngoscope proceeded to examine the larynx, very readily bringing into view the bone with one end imbedded in the anterior tracheal wall just below the vocal cords, the other end free and inclined upward. This was viewed by the grandfather of the child and by Dr. Connally. Forceps were passed in, the bone was grasped simultaneously with the patient vomiting, when the instruments were quickly withdrawn. The child slept quietly in a recumbent position for the first night in six weeks according to the father's statement. Patient was examined again the next morning and showed a small ulcer where the bone had been imbedded, and the tracheal wound in favorable condition. So the wound was permitted to close, and the patient dismissed in a few days, apparently in normal condition.

Case No. 7.—Sept. 20, Mr. L., male, white, age 45, came to us saying that while eating fish for lunch he "swallowed a fish bone which hung on

the way down." Mr. L. is a very muscular man, but did not wish to take ether, so we used cocaine as a local anesthetic, placing him on the operating table, head and shoulders slightly lower than the body. With some difficulty the esophagoscope was passed into the esophagus; and rather low down a large three-cornered or T-shaped bone could easily be seen with one point caught in the esophageal wall and the long shank of the bone pointing downward. So passing a hook to disengage the bone from the membrane, as soon as the bone was loosened from its position, the patient swallowed it before the forceps could be introduced. It gave him no further trouble. I think that a general anesthetic in such cases not only renders introduction of tubes much easier, but by abolishing the reflexes, lessens the probability of swallowing the foreign body when its position is disturbed.

Case No. 8.—August, 1915, while in West, Tex., I saw in consultation with Dr. J. H. Thomas, of West, a six-year-old girl, giving this history: About a year previously she had a beard of oat straw in her mouth and aspirated it with the usual symptoms following. It cleared up in a little while, to be followed in two or three months by a continued fever, which was never diagnosed to the satisfaction of the attending physician. The child then suffered with fetid bronchitis; and the right lung by auscultation and percussion showed considerable involvement. Endoscopic examination was refused.

Case No. 9.—Oct. 16, 1915, Master H. L. L., age four years, male, white, from Valley Mills, Tex., was brought to us by his parents, giving the following history: About five or six weeks previously, while eating watermelon, he aspirated a seed, having the usual symptoms. Was taken to a laryngologist in a neighboring city, who examined him and advised going home to wait for it to be coughed up. Within the next two or three weeks the child had developed quite a severe cough, but failed to bring up the seed. It developed an elevated temperature a few days before consulting us. On the morning of Oct. 16, upper bronchoscopy was employed without anesthesia, followed immediately by tracheotomy, under local anesthesia and lower bronchoscopy. On opening the trachea, a great quantity of mucopurulent secretion was expelled through the wound. The bronchoscope was introduced and passed to the bifurcation, but readily became blocked with mucus and pus, and on being quickly withdrawn was followed by a gush of pus and the watermelon seed. The tracheotomy wound was cleaned and packed in the usual way. Patient's elevated temperature continued for two days. Recovery was uneventful, patient leaving the hospital on the fifth day after operation.

Case No. 10.—Oct. 29, 1910, Baby R., white, age 14 months, from Patrick, Tex. Father says four days ago his wife, baby and he went to the M. K. & T. Station at Waco to meet his brother. While eating pecans, the baby became choked on pecan meat, but after a little while seemed to get all right. Again that night it strangled and it was some time before it was relieved. At that time it was seen by its uncle, Dr. R. Again the night before I saw the baby its breathing was very labored. I found it with distressed breathing. Temperature of 101°. Direct laryngeal examination showed a dirty gray membrane in the larynx. This looked so much like a diphtheritic condition that I removed a piece of membrane from which I made a culture, giving antitoxin at once. Culture proved to be diphtheria. Child's recovery was apparently uneventful, so we concluded that there was no foreign body until several weeks later, when the patient became croupy and developed a bad cough. During a paroxysm of coughing the piece of pecan was expelled. Since then there has been no trouble.

Case No. 11.—March 13, 1913, Mrs. H. R. brought her little son, age 2 years. The family physician, Dr. Craven, accompanied them. The child was suffering with what had been diagnosed asthma and had been sick nine or ten months. No previous illness. Parents both healthy. About one year before they thought the child had swallowed a button, but an X-ray examination and two laryngologists failed to confirm the presence of the button. Present condition: The child is fairly well nourished, has distressed breathing, both lungs are full of mucus and a rattling noise from breathing could be heard even at some distance from the child. Believing this to be a case of obstruction due to a foreign body and at that time having no competent Roentgenologist in Waco, I sent the patient to Dr. Martin, of Dallas, for examination and a picture of the lungs, which failed to confirm my opinion. I insisted upon an endoscopic examination, but this was not permitted. So I removed a large growth of adenoids, but with very little improvement. About four months after consulting me the child coughed up a horn overcoat button, somewhat shriveled and distorted in shape from its long sojourn in the esophagus. The lung symptoms were evidently caused by pressure upon the larynx, disappearing rapidly following the expulsion of the button. The patient is now a healthy and happy boy.

The fact that within a year nine cases came under the care of one firm possessing no special reputation in this line of work is sufficient to impress us with its very great importance to the medical and surgical world. We believe it the duty of those of us who are doing this kind of work to report our failures as well as our successes along with those cases coming under our observation but refusing operation, that we may arrive at more definite conclusions as to the end results, and that the general practitioner may cease to advise delay, awaiting the coughing up of the foreign body.

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Discussion on page 931.

ENDOSCOPY IN THE AMBULATORY CLINIC*

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We all recognize the value of the increased efficiency put at our disposal by the comparatively new instruments of precision and accuracy for the direct inspection of the esophagus and bronchi. The numerous forms of bronchoscopes and esophagoscopes on the market and the many reports of cases where they have been successfully used, bear sufficient testimony of our appreciation of their worth. I think all are agreed that for the exploration for, and the removal of, foreign bodies, for the diagnosis and treatment of esophageal strictures and similar purposes, they are of incalculable value.

There is a tendency, however, on the part of a great many of us to limit their use to these particular purposes. Some are inclined to believe that the use of the various endoscopic tubes is a rather formidable procedure, requiring somewhat elaborate hospital or operating room equipment. While this is in a measure true of certain cases and for certain manipulations, it is none the less true that ordinarily the introduction of the esophageal tube or bronchoscope and a thorough exploration and inspection of the esophagus, trachea and upper part of the bronchial tree, is a very simple matter which can be carried out in any ordinary ambulatory clinic, with local anesthesia, with little or no discomfort to the patient and with vast benefits to our patients and ourselves, both in making an accurate and precise diagnosis and in the application of appropriate therapeutic measures.

In my own clinic I make it a practice to examine with the tube any obscure case. It may be a persistent, unexplained cough, the cause of which is not to be found by ordinary physical examination of the chest; or it may be a case of esophageal discomfort, either a difficulty in swallowing, a lump in the throat, regurgitation of food or any of the numerous indefinite troubles of which our clinic patients so often complain and which we are apt to dismiss lightly with a perfunctory diagnosis of globus hystericus, neurosis or what not.

The results of this practice, though they have been in no way startling, have nevertheless convinced me that the procedure is well worth the trouble both in satisfaction to ourselves and in benefit to the patients. I think it is a practice that might well be adopted with profit in all our outdoor clinics as well as in our private practice. It is with the hope of popularizing this measure so that it may be more generally adopted that I shall describe in a few words the method used in my clinic, its simplicity, harmlessness, and the ease with which it may be applied, and then refer briefly to a few conditions in which it has been of service.

At the outset it should be stated that there is no pretense of originality in this suggestion. It is already in use in some clinics. I first saw it used as a routine procedure in the clinic of Dr. Ross Hall Skillern at the Medico-Chirurgical Hospital in Philadelphia. The method is described in detail in Bruning's book on "Bronchoscopy and Esophagoscopy." The patient is examined in the erect position, sitting on a low stool with the physician standing in front of him, and an assistant to support and steady the head from behind. One can get along without an assistant, but the presence of one facilitates matters. Some prefer to stand behind the patient and examine over the head, which is the same relative position as one has in examining the patient on a table with the head hanging over the end. But to me, the position in front has been more satisfactory.

Before placing the patient upon the stool for examination, it is well to begin the preliminary anesthesia. An applicator dipped in a 10% cocaine solution is applied to the gums around the two upper incisor teeth, to the post-pharyngeal wall, and then with the head tilted well back and the tongue held firmly down with a tongue depressor, to the base of the tongue, to the hypopharynx as far down as one can reach, and to the laryngeal surface of the epiglottis. The applications

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are repeated two or three times until a good local anesthesia is obtained. If it is desired to pass simply an esophagoscope, this is all the primary anesthesia necessary. If, however, a tube is to be passed into the trachea and bronchi, it is necessary thoroughly to cocainize the larynx and the cords. This I usually accomplish by applying the laryngeal applicator, dipped into a 10 or 20% cocaine solution, directly to the larynx and cords. Some prefer to use the laryngeal syringe for this purpose, but I prefer the applicator for the reason that the amount of cocaine used may be much more easily controlled by that method. Bruning's syringe applicator is very useful for this purpose.

The preliminary anesthesia having been accomplished, the patient is transferred to the low stool mentioned above, and by means of any direct laryngoscope the larynx is brought into view. I prefer Bruning's direct laryngoscope for this purpose; and indeed I have found Bruning's instruments for bronchoscopy and esophagoscopy more suitable throughout for this form of routine clinic endoscopy than the instruments of Jackson, Mosher and others. The latter instruments have a very important place in more elaborate operative or manipulative procedure, but for simple routine clinic examinations I think Bruning's regular equipment is the most practical.

With the direct laryngoscope in place and the larynx in view, it is then necessary to complete the anesthesia. If it is proposed to do only an esophagoscopy, it is necessary simply to anesthetize the entrance to the esophagus, now plainly in view, by introducing a moderately long straight applicator, dipped in a 10% cocaine solution, into the upper end of the esophagus to the level of the cricoid cartilage. Two or three such applications and the patient is ready for the esophagoscope.

The Bruning esophagoscope is now introduced, always under the guidance of the eye, into the upper end of the esophagus. This portion of the esophagus is inspected and then the instrument is readily pushed its full length into the esophagus. By means of the extension tube which is next inserted and gradually pushed downward, it is easy to examine the whole length of the esophagus down to the cardia. And the extension tube may be pushed through the cardia, dilating it as we go until it reaches practically into the stomach. I have never passed the tube actually into the stomach, in this position and with local anesthesia, though possibly it might be done with safety. It has seemed to me, however, that if the tube is to be passed on into the stomach the more complete relaxation obtained by means of a general anesthetic is to be preferred.

I shall not describe in full the method of introducing the esophagoscope or the bronchoscope, as the whole procedure is well described with a wealth of detail in Bruning's book. The esophagoscope with the extension tube in place is then slowly withdrawn, always under the guidance of the eye, so that the entire length of the esophagus is reinspected during the withdrawal. Anything that might have escaped observation during the introduction of the tube may be noticed during its withdrawal.

For the use of the bronchoscope the anesthesia is a little different. The larynx and cords having been thoroughly cocainized as described above, and the larynx brought into view by the direct laryngoscope, a long straight cotton-tipped applicator soaked in a 10% cocaine solution is passed, under the direct view of the eye, through the glottis into the trachea and then rapidly introduced as far as its bifurcation. It is now slowly withdrawn, touching the tracheal walls during the withdrawal, and so the trachea is cocainized throughout its entire length. This is repeated once or twice until there is good anesthesia.

Bruning's bronchoscope tube is then readily passed, under the guidance of the eye, through the glottis into the trachea. By this means a complete view of the trachea as low down as the bifurcation is obtained. If it is desired to examine the bronchi, the extension tube is introduced and passed into the right or left main bronchus as desired.

It is not claimed that this method is so good as some others for the removal of difficult foreign bodies, or for other prolonged operative measures in the esopha-

gus or trachea. In the first place, the patient can not bear the tube in place so very long, and in the second, accumulation of secretions and other difficulties limit the possibilities of this examination in the upright position. However, its simpicity, ease of application and safety make it admirably adapted to simple inspection of the parts for diagnostic purposes or for the carrying out of brief operative or therapeutic procedures; such, for instance, as the removal of simple foreign bodies from the esophagus, the removal of a section of tissue for microscopic examination. or for local applications to the walls of the esophagus, trachea or bronchi.

I have examined in this manner quite a number of cases of obscure coughs; that is, patients who have long complained of persistent cough and in whom the physical examination of the chest was entirely negative; and also several cases of bronchial asthma. Though I have not found any cause of the trouble in these examinations except in one case where there was a point of localized inflammation well down in the trachea near the bifurcation which I treated with local applications of weak silver and Mendel's solution, in some instances, nevertheless, the result of the manipulation has been a marked improvement in the symptoms. Whether this improvement has been due to psychical influence or whether it has been due to the local application of cocaine and adrenalin to the tracheal and bronchial mucous membrane, can not be determined. I should think it due more likely to the former cause, as the relief from the latter must, from the nature of things, be more or less transitory. However, be that as it may, the improvement in some of the cases has been a permanent one, inasmuch as it has lasted for six months or a year at least. How much longer it will last can not be said.

One patient, a lady about forty-five years of age, had complained for a long time of a troublesome bronchial cough and frequent attacks of bronchial asthma. In her case the treatment, which consisted of local applications of cocaine and adrenalin to the trachea and upper bronchial tree, was repeated seven or eight times at three- or four-day intervals. The improvement was marked and prompt. This treatment was applied over a year ago and the last time I saw the patient, some three or four months ago, the symptoms had not returned.

Another patient, a young woman, an employee in a cotton factory where there was much dust and lint in the air, had been troubled with a cough for a long time. Two or three treatments gave her marked, though not complete, relief. At any rate, she was able to continue in her employment, though she had been on the point of giving it up on account of the troublesome cough.

Though in this condition of obscure cough the treatment has been, in some cases, moderately satisfactory, it is nevertheless in the esophageal cases that the use of the tubes has been of most benefit; first, in the search for foreign bodies, and second, in determining the cause of obscure esophageal symptoms. We all know how often patients come to us complaining of having swallowed a fish bone or something similar and insisting that it is stuck in the throat. Though as a rule on examination no foreign body is to be found, still the satisfaction to ourselves in being able to make sure of this point and the great mental relief to the patient in being assured that the esophagus has been searched throughout its length and that there is no bone, is well worth the trouble to the doctor and the slight discomfort to the patient.

A case in point: A middle-aged woman came to the hospital about four weeks ago with the history of having swallowed a fish bone a few hours before. She insisted she could feel the bone sticking in the throat about on a level with the cricoid cartilage. A fluoroscopic examination by an assistant in the X-ray room was said to show the bone in this region. When the examination was repeated, however, an hour or so later in my presence, by the radiologist himself no foreign body was to be seen. Examination with the laryngeal mirrow revealed a swelling and edema of the left arytenoid extending down into the sinus pyraformis, and the supposition was that the bone was lodged somewhere in this region. The esophageal tube was introduced with some difficulty owing to the pain and tenderness in the left arytenoid region and then carefully withdrawn, but no foreign body was to be seen. I was thus enabled to assure the patient that though she had doubtless swallowed a bone and it had somewhat injured the throat, nevertheless the bone had passed on and her discomfort, due to a slight wounding of the tissues, would soon pass off, a prediction that was verified in the next day or two.

There are any number of cases of this character and the mental relief afforded the patient by this simple examination

and subsequent reassurance is really quite remarkable.

In another class of cases this examination is of even more use. We all know how common is that symptom complex known as globus hystericus and how little is to be done for it by the treatments hitherto at our disposal. I have examined a number of such cases by means of the esophageal tubes and have convinced myself that a large percentage of them are due to a moderate degree of cardiospasm. This observation has been confirmed by fluoroscopic examinations. I have in my records a number of such cases which have been treated for this complaint. The treatment consists in passing the tube through the cardia. Wherever possible the largest tube is passed and by this means a fair degree of dilatation is obtained. The treatment almost always results in benefit and usually in a cure. Naturally, for very high degrees of cardiospasm this treatment is not so effective as dilatation with water bags and similar procedures. But for the moderate cardiospasm which gives rise to the troublesome symptoms of the so-called globus hystericus, the dilatation is ample. That the benefit attained is due actually to the dilatation of the cardia and not to psychical influence or suggestion, is proved by the fact that in some of the cases the tube, the first time it was used, was passed only to the cardia, but not through it, with no change in the symptoms. A few days later it would be passed again, this time through the cardia, affording prompt relief. When I speak of the cardia I mean not simply the opening of the esophagus into the cardiac end of the stomach, but the whole abdominal esophagus, that is, from the point where it pierces the diaphragm to that where it enters the stomach.

In addition to its usefulness for the above purposes, it is almost needless to say that this method of examination is invaluable in the examination for, and diagnosis of, esophageal carcinoma. I well remember in the days before esophagoscopy was as general or as simple as it is now, how every patient of middle age or over who complained of some indefinite pain in this region, difficulty or discomfort in swallowing, always brought with it the suggestion of the possibility of beginning malignant growth. Nor was it easy as a rule to exclude such a diagnosis. Now, however, by the simple introduction of the tube it is easy to determine the presence or absence of a carcinoma. Nor indeed do I know of any relatively so simple a procedure in any part of the body which affords so great comfort and peace of mind to the physician as well as to the patient as this ruling out of the possibility of cancer. If it were useful for no other purpose, this alone would be sufficient reward for the effort necessary to acquire proficiency in the technique.

Concerning direct laryngoscopy which also, of course, comes under the head of endoscopy, little need be said. I take it for granted that direct laryngoscopy is already in pretty general routine use in most of the clinics. Its application is simple and its usefulness obvious.

In closing I wish to reiterate what I have said in the beginning—it is not with the thought that there is anything new or original in the ideas suggested that this matter is presented, but rather with the hope that some at least who have heretofore reserved this endoscopic procedure for exceptional cases,—those of foreign body and the like, where the indications for its use are clear and undeniable,—may be stimulated to a more general and routine use of the tubes in the general run of their clinic and private patients. If it proves as satisfactory and useful in their hands as it has been in mine, I am sure they will never regret its adoption.

DISCUSSION

Papers of Drs. Burgess and Weil

Dr. R. H. T. Mann, Texarkana, Ark.—The first step necessary is an exact diagnosis. When practicable, the X-ray should be used in every case. However, it is of little value in a great many cases in this section of the country, because a very large per cent. of the foreign bodies are vegetable matter and are not to be seen with the X-ray.

Whenever there is the least doubt as to the existence of a foreign body in the esophagus or the bronchus, an endoscopic examination should be made, because foreign bodies will be found more frequently than the history of the case indicates.

There are now many failures to remove foreign bodies due to the lack of suitable instruments

for the individual case This is, as yet, rather a new procedure, and the instruments are imperfect. There are some cases where up to this time we have no suitable instruments, or at least very poorly suited ones for the removal of these bodies. Take, for instance, when hard bodies, such as rock or stone, become firmly lodged in the lumen of the bronchus, the removal becomes very difficult and may be impossible. Especially is this true if the foreign body fits so tightly as to cause a contraction of the bronchus above it. How, then, are you to get forceps around it?

Again, take the question of safety pins. There is now not a forcep which is entirely satisfactory for the removal of a safety pin. No instrument has been invented which will remove these bodies with that degree of ease which we would like.

Then, too, there are certain questions of procedure which have not yet been definitely decided. For instance, whether or not to operate upon a child with high temperature caused by the presence of a foreign body; also whether or not a tracheotomy should be performed or an effort be made to remove a foreign body by the direct method.

I remember very distinctly a stone in the right bronchus which I did not succeed in removing because it was so large I was unable to get anything around it. Had I performed a tracheotomy in my first effort to remove the stone instead of attempting upper bronchoscopy, I feel sure that I would have succeeded, because the stone became dislodged and followed the bronchoscope up as far as the vocal cords, when it dropped back, and all other efforts, notwithstanding the performance of a tracheotomy, failed.

There are many things, gentlemen, which have not yet been settled, but there will be fewer failures from time to time as the instruments are improved and the operators become more skilful.

Dr. W. T. Patton, New Orleans, La.—It seems to me that this treatment is a specialty in itself, and I think that in the cases that the doctor spoke of,—in very hard cases,—these should be referred to a man who is doing a great deal of that work. Ordinarily, very few of us in the smaller cities are able to see many such cases in a year. In the larger cities we do see quite a few cases. But unless we have a large clinical connection and sufficient funds to supply us with instruments, which are very expensive, good assistants and thorough equipment, very few become sufficiently skillful to remove such difficult bodies as safety pins, etc.

It has been a very hard matter to examine the larynx under the indirect method in children and infants, which, up to the time of the bronchoscope, was almost an impossibility. But now it is a very easy matter to make an examination without any anesthesia.

In our City, Dr. Lynch has the advantage of all of us, having a big hospital service at his disposal, where he sees a great many esophageal cases. Hence I believe that I would refer any very difficult cases to Dr. Lynch. I think that we all ought to be able to do the work that Dr. Weil speaks of. I use it in the Charity Hospital and in the Touro; and I have gotten very excellent results. I spent several days in Dr. Skillern's clinic last Summer. They use the bronchoscope a great deal and the patients are examined as easily as we examine ours with the laryngoscope.

I will cite one case to illustrate, and that is a case I had in the Charity Hospital of an insufflated persimmon seed of a week's duration. On examination, there was no blocking of any of the bronchi. There was rough breathing on both sides of the chest, but I could not localize anything. I was afraid to give the child general anesthesia, for he had a bad cough. Yet I could not do much with him without general anesthesia. So I thought, safety first, and asked Dr. Lynch if he would see the case for me. I took the patient to him and he said he could not do much without general anesthesia. We gave the child ether and Dr. Lynch was just getting ready to put in a mouth gag when the child stopped breathing. The doctor made a quick attempt to pass his bronchoscope through the larynx so he could use it as a tube, but the child was apparently dead. Dr. Lynch did a quick and skillful tracheotomy; we gave artificial respiration; and in a few minutes he began to breathe again. Then Dr. Lynch began to work. He examined all the lower bronchioles and found nothing. Next he removed his bronchoscope to put in a smaller tube and the child coughed, something hit up in the larynx, and Dr. Lynch turned his tube around and found the persimmon seed under the vocal chord. It had been there all the time and was working back and forth. And probably when the child coughed, during the first part of the anesthesia, the seed got between the vocal chords and blocked up the respiration.

Now, another very interesting case came to my service about a month ago, an old lady sixty-five years old with no teeth at all, whose son came home to dinner and offered her a cup of soup. She took it and proceeded to take a swallow, and immediately afterward said she had swallowed a bone. I thought it was some little bone that I would not be able to see. But I put in the laryngeal spatula and, to my surprise, there was a bone sticking up right at the entrance of the esophagus. I tried to get at it, but could not. The harder I would pull the tighter it would fit; the bone resembled about half of a patella. Finally I got a hook behind it and, by turning it, succeeded in getting it out. The old lady had a nice recovery and had no trouble. I believe we all ought to do this work that Dr. Weil speaks of, and I am sure we will find it very satisfactory.

A DOMINANT MENDELIAN INHERITANCE, PRINCIPAL FACTOR IN OCCURRENCE OF CATARACT AND ECTOPIA LENTIS, WITH REPORT OF CASES*

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The world has been tardy in accepting unpleasant facts, especially those that overthrow preconceived, cherished theories. To many, to sleep is sweeter than to awake to the stern realities of the laws that govern our life stream. Hence, the study of human heredity has been confronted with two difficulties,—one the immense labor necessary to secure sufficient reliable data as to the re-occurrence of characters observed in a life current upon which to establish unquestioned conclusions; the other the opposition to the acceptance of the evidence gathered, because it too often destroys the airy castles of a future charming family tree.

What we have learned in the twentieth century thus far has caused us to change our views as to the fundamental principles which govern the physical, educational, and moral development of man. As an example, every student of heredity now knows that "all men are not created equal," notwithstanding the fact that our Declaration of Independence says so. Again, eugenists have demanded in years past that woman be surrounded with pleasing environments during pregnancy in order that her offspring might develop lovable traits of character; but now we know that the mother woman and the mother hen have almost an equal influence on the mental and physical characteristics of the fertile egg during its development. In fact, animals that incubate their eggs outside the body leave their characteristic stamp upon their young as completely as do those who incubate their eggs within their bodies.

The Bible story of Jacob's treatment of his father-in-law Laban's heifers shows that the false belief concerning maternal impression dates back into remote antiquity. We accept the Bible fact of the event, but not the inference drawn from the story,—it was a miracle.

In the case of two brothers who married sisters, the son of one family became a hollow-chested lawyer, the child of the other a big burly blacksmith. Environments made them such. Yet, in the next generation the lawyer's son was the equal physically of that of the blacksmith's son.

Until the days of Mendel, heredity was a phantom associated with elfs, goblins and witches, whose chief achievements were weird and fantastic presentations of superhuman forms, aye, even for a quarter of a century after his day, for the Abbot of Brünn and his teachings were forgotten until the birthday of the twentieth century, when the botanists de Vries, Correns and Tschermak rediscovered the important principles of heredity, as reported in Mendel's "Experiments in Plant Hybridization." Today this principle is known as "Mendel's Law" and is the foundation upon which we have built our knowledge of heredity.

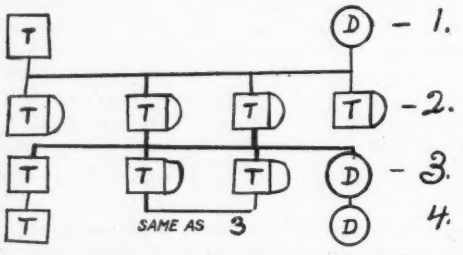
The story of Mendel's life among his garden peas should be familiar to every scholar. Aside from its scientific value, it is a fascinating tale.

Although the experiments of the early investigators mentioned were conducted in the vegetable kingdom, nevertheless the laws enunciated by them have been in the main confirmed by experiments and observations in the animal kingdom, including man.

Mendel's experiments consisted in crossing peas, differing in some definite comparable characters, with a view of determining the behavior of these contrasting characters in the hybrid. He found that tall peas crossed with dwarf peas resulted in *tall* hybrids. He then proved that characters did not mix in the hybrid, but *one only* of the two contrasting characters appeared. This character, as in the case of the tall peas, he called *dominant;* the other

*Read in Eye, Ear, Nose and Throat Section, Southern Medical Association, Ninth Annual Meeting, Dallas, Tex., Nov. 8-11, 1915.

character that did not appear in the hybrid, as the *dwarf* character in the peas, he called *recessive.* Then he went further and *interbred* the hybrids. But here he found that only one plant in four developed the *recessive* character, while the other three retained the *dominant* character, resulting in the case of the tall and dwarf peas, — three tall peas and one dwarf pea. In the first as well as in the hybrid generation no transitional forms were ever found. But there occurred this difference, that the character which in the first generation from the hybrid exhibited the recessive character did not further vary in the third generation, but remained constant in their offspring, while the dominant character bred from hybrids resulted in three-fourths of their offspring showing the dominant character, and they carried down in their generation the same ratio as hybrid forms,—three to one. The following diagrammatic chart will illustrate Mendel's laws:



In this crossing of contrasting characters, Tall is the dominant character, Dwarf the recessive.
T=Tall.
D=Dwarf.
Square equals Pure Dominant.
Circle equals Pure Recessive.
Square and Circle equals Hybrid, but showing only dominant characters.

In the third generation ¼ are Pure Dominant—T; ¼ are Pure Recessive—D; ½ Inter-bred Hybrids—TD.

No evidence has been produced to break down the proposition that vegetable and animal life obey like breeding laws. In the vegetable kingdom we have wheat of a certain strain that will resist rust diseases, corn with red pigmented ears, all breeding true and following like laws that rule the animal kingdom.

In brief, the Mendelian law of alternative inheritance consists of the following principles:

(a) Unit Characters.

An organism is composed of distinct detachable elements, which are inherited as a whole, and are transmitted in heredity,—the so-called "Unit Characters" of de Vries.

An oosperm (the fertilized egg, a union of a spermatozoon with an ovum) may contain or be devoid of any element in either parent cell, but it can *only possess* such elements as were existant in the parent cells. If, however, an oosperm contains characters found in both parent cells, we call it pure-bred, but on the contrary, if an element that appears in the oosperm is found in only one parent cell, we say the resulting individual is cross-bred, or heterozygous,—in plant life a hybrid.

(b) Dominance.

When contrasting unit characters or elements are present in a parent cell they do not as a rule blend in an offspring, but one is *dominant* and appears fully developed, while the other is *recessive* and for the time is not manifest. Many hereditary diseases and malformations show this principle of a dominant or a recessive character. Nearly all osseous malformations, skin and nervous diseases, and diseases and malformations classified in the same category as the two I shall specifically discuss, come under the *dominant* division; while in the recessive division will be found mental and pigmentary defects, night and color blindness.

(c) Every Sexually Produced Individual is a Double Being.

Not alone as a whole, but double in every cell, one-half his determinants derived from the male and the other half from the female, and yet every individual germ cell is "pure" with respect to any particular unit character, even though it came from impure or hybrid parents.

The fact that unit characters are inherited independently of one another, in contradistinction to the old idea that individual characters become changed, blended or lost by repeated unions with other blood, is of tremendous import to the sociologists, eugenists and more so to the physician and the people at large. We

know that unit characters do not blend in a thousand years, but at any time in a generation may appear entirely unchanged, although they have bathed themselves in the germ plasm of a score of generations.

The son resembles his father physically and mentally as much as he does his mother, hence, we conclude that the father and mother furnish equally the elements that make each succeeding generation, plus the environments of that generation. Because parenthood stamps the physiognomy, pigment of the iris, the skin, the hair, the shape of the torso, the length of the arms and the legs upon their children and not only these but the charming minds, as well as the crooked ones, and as all the father furnishes to stamp his characteristics upon his offspring is his sperm cell and the mother her ovum, we are forced to the conclusion that in the *sex cells* are contained all the determiners that dominate the destiny of man as a race.

Heredity, therefore, is the appearance in the offspring not of those characteristics found in either parent caused by environments, but of the characters found in their germ cells. The sum of all of these varied characters found in the male and female germ cells is the heritage of every oosperm or zygote. The zygote does not contain the roman nose, the black eyes, the violent temper, the wanderlust of its progenitors, but it does contain the determinants, — the units of the germ cells, — which make possible the development of these characteristics in the offspring. Without these determinants such characteristics never appear, notwithstanding any environment. But it does not follow that because of the possession of these determinants they *must* appear in the offspring fully developed, for we know that environments do in many instances modify the *development* of the determinants, but never transmit such modifications to an offspring.

We would note in passing that the laws of heredity that apply to physical deviations from the normal man are the same as the laws that apply to mental deviations. We know that the Negro will have black kinky hair in every generation, but we dodge the issue when in his education we expect to graft European mental characteristics upon the second generation on account of such environments in the preceding one. A physical or mental injury, or change produced in one generation from extraneous causes, will have little or no effect upon any succeeding generation, immediate or remote.

ECTOPIA LENTIS AND CATARACT

In ectopia lentis a direct inheritance of a weakened or structural deficiency of the suspensory ligament is found, and not a condition due to pathological causes, unless you would catalogue aniridia as a pathological condition.

From a Mendelian point of view, presenile cataract and etopia lentis are *not* pathological conditions, but are deviations from the normal through failure of certain determiners to operate to make a normal eye. We are sure that all cases of congenital cataract or ectopia lentis are due to a *dominant* factor in the germ plasm of at least one parent, even if omitted in the paternal generation. For presenile cataract and ectopia lentis never start de novo, although we may not be able to demonstrate this in every case. This statement is in accordance with the conclusions of Davenport and Goddard in their investigations of feeble-mindedness.

Ectopia lentis is found less frequently than cataract. Loeb called a record of only 42 families with 150 children, of whom 70% were affected. While in the same paper he presented a record of 304 families having cataract, and who had 1,012 children, and of these 589 were affected, or 58%. Here again we see evidence of Mendelian dominant inheritance. Affected individuals show either half or all of their offspring affected, while unaffected parents may not have defective offspring. The rule is that if either parent has cataract, at least half of the offspring will develop the defect. In certain families cataract often appears early, before the age of marriage. Contrary to the usual history of ectopia lentis, cataract may and often does skip a generation to reappear in later generations of the same strain.

Davenport states that if ectopia lentis

be present in either parent it will be present in about half the children, but if present in neither parent it will be absent from all descendants.

We can add but little to the already voluminous reports such as those of Nettleship, Zydek and many others, including the older reports of Loeb. But we desire to present our conclusions, drawn from a study of over one thousand recorded cases of cataract and ectopia lentis, with special reference to their heredity in obedience to Mendel's law.

We find that presenile cataracts are almost uniformly due to heredity. We are not willing to admit that any considerable number are caused by toxic influences which may exert themselves upon the oosperm or the fetus. Of course, a line of distinction must be made between the etiology of presenile cataract and the senile form, as it is well known that the latter develops from such systematic causes as diabetes and arteriosclerosis, although even these diseases may be due to heredity.

Another factor that often causes erroneous records is the death of the father or mother, the one who carries the determining element, before the usual period when cataract appears in the family. Hence, the *record* that omits a generation from the direct transmission of cataract may occasion very faulty conclusions, as a longer life or a later record might have given different results. From our records we learn that, although heredity does in a large number of cases determine the period in life when cataract appears, nevertheless that is by no means always true, as we find that congenital, juvenile and senile cataracts do appear in one hereditary line of descent.

An examination of the family tree in the upward direction gives us more correct data than in the downward direction. The case reported by Shauz, where the three sons of a healthy mother developed youthful cataract, and the father died at forty of pulmonary disease, although it is said that he had poor eyesight, leads us to conclude that the father or the mother were not negative quantities, but might have developed cataract in later years of life. This year Clark, of Columbus, Ohio, reported a case of a mother, three daughters and a son, all of whom had double congenital cataract; two older sons alone escaping.

The figures collected by Loeb on cataract and ectopia lentis, published seven years ago, show that collateral heredity produces almost as many cases of cataract as direct heredity. But my own review of later reports do not sustain such a conclusion. In fact, the cases collected by Zydek and a score of others clearly show that *direct* heredity produces four times more cases than those from a collateral line.

It has not been demonstrated thus far that these affections are transmitted more through the female than the male. A large number of reports show family records in which all members of the family are affected. One observer operated upon three generations, and many others, like Becher, who reports a family in which the grandfather at fifty-seven, a father at forty-eight and a son at twenty-five developed cataract, have had like experiences. Evidence is so complete that it substantiates our claim of Mendelian occurrence of these affections. Contrary to many of the older observers, Bach has recently stated that as a rule only the opacity of the lens is transmitted, not the form of cataract. Bach also states that presenile cataract does happen in collateral heredity, but that mostly, however, it is in the direct line.

Although hereditary cataract may make its appearance at any age, nevertheless age itself is a direct factor in too many cases to be ignored. Because, repeatedly cases have been reported in which all members of the family have infantile cataract, or in other cases, all members of the family have juvenile cataract, and to this is added our "case three," which is remarkable in demonstrating *the age factor* in the development of cataract.

Sanson reports a family in which all the children became cataractous near the twenty-fourth year. Numerous cases like this show a predisposition as to the selective periods of life. And these periods may be congenital, juvenile or senile.

Hosch, who followed the appearance of cataract through several generations of a

family, emphasized the fact that cataract appears earlier in each succeeding generation. This was further confirmed by Bergmeister. From Haab's eye clinic and Eichorst's medical clinic of Zurich has been recently reported a family showing congenital predisposition to rheumatic valvular disease of the heart through the female line for four generations; also congenital disease of the aorta through the male line in the third and fourth generations. There also occurs the simultaneous appearance of ectopia lentis in all generations, which makes the report of special interest. We can from such evidence arrive at but one conclusion, that the determinating unit in the germ plasm alone produces these diseases in definite form, and at definite times subject to yet unknown environmental modifications.

The three cases that we have collected from our own practice illustrate two varieties of parentage as well as the selective age limit of heredity.

Marriage of First Cousins

Case 1.—Father's line normal except in family of the grandfather (who was a common grandfather of both father and mother), a case of blindness occurred. Mother's aunt and an uncle were blind. Mother when seen at forty-seven years of age showed extensive old retinitis pigmentosa of both eyes with history of eye trouble from childhood. Both lenses showed disturbance of cellular structure,—wavy water-grain lines. There were four children, two with normal eyes. We operated upon one son for congenital cataract at one year of age, and upon another at fourteen years of age.

Case 2.—Last month I operated upon a woman eighty years of age who developed cataract in one eye five years ago. The other eye has an immature cataract. Her father lost his sight from cataract after seventy-five years of age. She has one sister eighty-three and another seventy-eight, who have developed cataract within the past five years. They have one brother seventy-six years of age, who is supposed to have good vision, also two younger brothers. Five brothers and sisters died before adult life. The three who have cataract have large families from fifty-five years of age downward, all free from cataract.

Ectopia Lentis

Case 3.—Father and four children with double ectopia lentis, with marked displacement of lens in all,—boy 17, girl 14, boy 11, girl 9, and boy 6. There are two other children, boy 7, and girl 1, who are questionable and were not seen; the parents did not know whether the eyes were perfect, but thought they were nearly so.

In the boy 14 the lenses are so poorly supported that he can voluntarily throw the lenses into the anterior aqueous chamber in front of iris by throwing the head forward. Then by throwing the head backward, the lenses are thrown into the posterior aqueous chamber back of the iris. In both instances the lenses fall downward about two mm.

Family History.—Father's family history, except parents, which is negative, is unknown. Mother, who is normal, has a father seventy-five years of age with cataract. Such other history as could be secured was negative. Now here is a case in which four or possibly six children of a father, with dominant character of ectopia lentis, was crossed with a woman with dominant units as to another lens trouble,—cataract. We can not help believing that the units in the mother, that she carried from a defective father with cataract, accentuated and caused to become more dominant in the zygote, a group of units that produced ectopia lentis in six children. Again, we may reason that it is not alone one unit that makes a dominant character for ectopia lentis or cataract, but a group of units, and that some of these units are common to both ectopia lentis and cataract.

DISCUSSION

Dr. Frank D. Boyd, Fort Worth, Tex.—I have seen some cases of ectopia lentis which I thought to be congenital, which is often due to a relaxation or absence of the zonula. As de Schweinitz mentions in his latest book, this displacement is ordinarily incomplete; but we sometimes have a complete congenital luxation. These are generally symmetric and oftentimes we find the displacement is lateral.

We have histories where there are several members of the same family affected,—for example, G. Griffin Lewis has reported hereditary ectopia lentis extending through six generations and involving sixteen individuals. Of course we may have dislocations due to disease of the eye,—namely, malignant myopia and choroiditis. Sometimes it may be due to traumatism; in fact, I have seen conditions of that character. Just in the past two or three days I have had a case where the lens was dislodged from its normal position, falling backward into the vitreous. However, I was able to bring it forward into the anterior chamber through operative procedures.

In regard to heredity where there is the transmission of parental characteristics to the offspring, the child possesses the mean between the character of each parent; that is, the father and mother share equally in transmitting their peculiarities. Yet it should be borne in mind that no two individuals are exactly alike; and besides the resemblances to the parents, every child differs in certain respects from the parent. Thus the Egyptian of today inherits the features and mental characteristics of his ancestors who lived 10,000 years ago. One cause of this is the fact that the physical features and climate of Egypt have remained unchanged for that period. Hurst remarks: "Heredity is merely a likeness

of effects due to the likeness of the causes producing them."

Galton speaks of alternative heredity and illustrates it by the color of the human eye. "If one parent," he says, "has a light eye-color and the other a dark eye-color, some of the children will, as a rule, be light and the rest dark; they will seldom be medium eye-colored, like the children of medium eye-colored parents."

In regard to Mendel's Law, as far back as 1865, this Austrian monk (Mendel) made prolonged experiments in crossing varieties of the pea. I will not go into an illustration of this, as no doubt most of you have read of his work.

To breeders, Mendel's law is of great importance, because, as remarked by Castle, "it reduces to an exact science the art of breeding in the case most carefully studied by him, that of entire dominance."

This is indeed a very valuable paper and one that requires careful study and shows that the doctor has gone into extensive research in its preparation.

Dr. Buxton, closing: In a paper, within the limits permissable, upon so extensive a subject we have been able to discuss only the salient points of interest. The apparent violation of the law of De Vrirs "Unit Characters" or the changes in the development of the Oosperm due to artificial chemical treatment or traumatism with resulting variations from the normal must be left to your investigation. Dr. Boyd's discussion developed the fact that he is well informed upon the subject. There is only one objection to his remarks I desire to raise—the physical characteristics of the Egyptian of today. It is not to Egypt but to the Pharaos and his colleagues of four thousand years ago.

Also Hurst's conclusions referred to by the Doctor are not sustained by any evidence and are in direct opposition to all recent investigation.

AUTHORS' ABSTRACTS

Eye, Ear, Nose and Throat

Deformities of the Nasal Septum: Their Correction by an Improved Technic for Submucous Resection. J. L. Maybaum, New York, American Journal of Surgery, August, 1916, p. 260.

The type of septal deformity and the indications for performing a submucous resection should be thoroughly considered before deciding to operate. Three types may be recognized: 1. Deviation of the quadrilateral cartilage, its free border projecting into the opposite side with a compensatory hypertrophy of the inferior turbinate on the side of the concavity. 2. Deflection of both cartilage and bony septum located usually near the floor of the nose, extending from within the vestibule almost to the posterior nares, impinging against the interior turbinate and frequently associated with Eustachian middle ear catarrh. 3. Deflection of the vertical plate of the ethmoid impinging against the middle turbinate, giving rise to reflex symptoms, and interfering with the proper drainage of the sinuses. To obtain the fullest benefits from the submucous resection, adenoids and narrowing of the posterior nares must be given proper attention. Recumbent position of patient, head slightly elevated is the ideal position while operating. Shock is eliminated and the floor of the nose is more accessible. Anesthesia: Cotton applicator moistened with adrenalin 1/1000 is dipped into powdered cocaine hydrochlorid and with gentle friction is applied over the entire septum, especially over the area opposite the interior end of the middle turbinate. No packing is used where conditions are favorable for keeping the patient under careful observation. Post-operative hemorrhage has not resulted by this method. Hematoma between septal flaps is avoided by providing drainage by anterio-postio incision along the floor of the nose. Post-operative manipulations in the nose should be avoided for three days to minimize the possibility of infection.

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THE S. M. A. MEETING AND CLINICS

The increase in membership from 600, in 1911, to more than 5,500 at this time, is not more phenomenal than the improvement in the scientific work at the meetings of the Southern Medical Association. All the gatherings have been successful; but each year they have been broadened in their scope and have been made more and more practical and scientific, until now we believe that no medical organization in existence has ever crowded into four days more of real interest and instruction to medical men than has been arranged for by the officers of the Sections on Medicine, Surgery, Eye, Ear, Nose and Throat, Public Health and Railway Surgery, and by the Committee on Clinics for the Atlanta Meeting.

Southern physicians and surgeons travel long distances to attend clinics, and their patients often make depressing journeys for treatment or for operation, when in their own or in a neighboring state there may be just as good clinicians and as skilled men in all lines of medical and surgical work as can be found anywhere in the world. The meetings of the Southern Medical Association, perhaps more than anything else, have brought this fact to the attention of the physicians who have attended them.

CLINICS

The Atlanta Meeting will mark the beginning of a new era in the work of medical societies in that it will be the first large assembly where a part of each day will be given over to clinics. Atlanta's immense Auditorium, in which all of the general and section meetings of the Association will be held, is within three blocks of the Grady Hospital and the Atlanta Medical College buildings, which together can provide operating and clinical

amphitheaters and lecture rooms that will comfortably seat two thousand physicians. Every morning from Monday through Thursday, from 8 'till 10 o'clock, clinics will be held on surgery, gynecology, genito-urinary diseases, orthopedics, general medicine, pediatrics, neurology, gastro-enterology, tropical diseases, ophthalmology, rhinology and oto-laryngology. The clinics will last from one-half to one hour each; and eight or ten different clinics will be going on at the same time. The Atlanta physicians with characteristic courtesy and generosity have agreed to invite physicians and surgeons from other places to hold the clinics; and many of the most celebrated men in the sixteen Southern States have consented to hold them. Friday and Saturday will be given over entirely to clinics by Atlanta physicians and surgeons at the various hospitals and sanitoria. The medical profession of Atlanta is the equal of that of any city in the country; and the clinics on Friday and Saturday will wind up a week of clinical and didactic post-graduate work for Southern physicians that has never been excelled.

ORATIONS AND ADDRESSES

The Oration on Medicine will be delivered by Dr. Marvin L. Graves, Professor of the Practice of Medicine in the University of Texas, Galveston, Tex. Dr. W. D. Haggard, of Nashville, Tenn., Professor of Clinical Surgery at Vanderbilt University, will deliver the Oration on Surgery; and Major-General W. C. Gorgas, Surgeon-General of the United States Army, has been selected as the Orator on Public Health.

Dr. W. A. Evans, a former Mississippian, but now Health Editor of the Chicago Tribune, and Mr. Frederick L. Hoffman, Statistician of the Prudential Life Insurance Company, of Newark, N. J., will address the Section on Public Health at a public meeting on Monday evening.

RAILWAY SURGEONS AND CONFERENCES

The surgeons of railways entering Atlanta have called their meeting to convene in that city during, or have arranged dates that will not conflict with, the meeting of the Southern States Association of Railway Surgeons, which promises to have a day, Monday, November 13, full of interesting clinics, papers and discussions.

The National Committee on the Eradication of Malaria, of which Surgeon-General Gorgas is Honorary Chairman and Surgeon-General Blue Active Chairman, will have a meeting during the session of the Southern Medical Association, at which time the Committee will discuss plans for a nation-wide campaign of education regarding the prevention of malaria. Mr. Frederick L. Hoffman, of Newark, N. J., than whom the South has no better friend, originated and founded this Committee, the personnel of which is made up, with a few exceptions, of members of the Southern Medical Association.

The Conference of Public Health Officials in the sixteen Southern States will attract a large attendance for the Section on Public Health, which has an unusually interesting program for the Atlanta Meeting.

The Conference on Medical Education on Monday, November 13, will bring together many of the prominent men engaged in medical teaching in the South, who will read papers and discuss subjects pertaining to medical education.

ENTERTAINMENT

Atlanta's hospitality has made it one of the greatest convention cities of the country. The local Committee on Entertainment for the Southern Medical Association has had to be restricted by the officers of the Association in the number of entertainments which the Atlanta physicians

desired to give during the Meeting. The entertainments planned will prove that the "Gate City of the South" deserves her reputation for hospitality, but they will not interfere with the clinics and regular meetings of the Association. Atlanta is a great city for golf, a game that many physicians have very wisely taken up, and a golf tournament for Southern physicians has been suggested. Certainly a great many physicians will go to Atlanta prepared to enjoy the wonderful links.

The doctor who fails to take his wife with him to Atlanta will miss the opportunity of giving a trip long to be remembered by her who has done most for his success and happiness. Atlanta and Georgia in November are wonderful and the entertainments planned for the ladies are quite extraordinary.

MEDICAL COLLEGE REUNIONS

The reunions of the different medical schools, when physicians meet their college friends and live over again the old student days, is one of the pleasant features of the meetings of the Southern Medical Association. Since Atlanta is centrally located, with railway lines radiating in every direction, it is expected that reunions of most of the medical schools of the South will be held. The Atlanta Medical College, representing the merger of three medical schools, will make an especial effort to make the graduates of the former medical schools of Atlanta feel that they are alumni of the Medical Department of Emory University.

SPIRIT AND ATTENDANCE

The spirit of the meetings of the Southern Medical Association is splendid and has often been mentioned. The Association has no legal or political functions, and those who go to its meetings are not there for profit or for personal aggrandizement. They meet together as true scientific men engaged in serious work in the various branches of medicine. There is no conflict of interest, for all are earnestly striving for the advancement of Southern medicine and surgery, or are working to solve the public health problems of the South. But each day when the sessions are over everything serious is thrown aside and the medical men of the old and the new South unite in enjoying each other. These are some of the reasons why the same men are found at the meetings year after year, and why each year the attendance grows. At Richmond, in 1914, the registration was more than 900, while last year at Dallas there were 1,200 physicians present. From present indications, on November 13-16, Atlanta will be the medical Mecca for over 2,000 of the more progressive physicians of the sixteen Southern States.

THE EIGHT-HOUR WORKING DAY

President Wilson and Congress, in enacting the eight-hour-a-day law as a working basis for engineers and trainmen, acted primarily to prevent an impending strike which would have resulted in financial disaster that would affect every citizen of the Nation. The average man probably does not see it, but President Wilson, when he urged Congress to pass the eight-hour law "in the interest of health, efficiency and a general increase of economic vigor," also had in mind something more than the desire to meet the exigencies of an emergency. He no doubt considered the far-reaching and beneficial effects of legislation that limits the working time of men to hours that are conducive to health, happiness and effiiciency.

The aphorism "eight hours for work, eight hours for eating and recreation, and eight hours for sleep" is based upon sound physiological reasoning, and he who departs too far from that plan of living will

in time surely suffer the consequences. The human mind and body must have sufficient rest each day in order to functionate properly; and there can be little doubt that the man who works for only eight hours a day is more efficient during his working hours than he who spends twelve hours a day at his post. The toxins that accumulate in the muscles and nerve cells from fatigue produce definite reactions that slow down muscular and mental action.[1]

Experiments have been made which prove that the mental and physical output from the last hours of a long working day decreases with each hour from the time fatigue begins until the output from the last hour of a twelve-hour day is almost nil. Not only that, but the mind and body of the person who is excessively fatigued do not become restored to the normal from short hours of sleep; and the day following, and even for several days, efficiency is impaired. After a few years of overwork there comes a state of chronic fatigue when a man may be able to remain at his work for the required number of hours each day, but the output from his labors is permanently reduced.

The railroad presidents may not see it now any more than they did when they opposed the law that was passed by Congress limiting the time that an engineer or conductor could remain on duty to sixteen hours in one day; but the eight-hour law is as much in the interest of the stockholders of railroads as it is to the engineers and trainmen. It is surely true that the labor output, or earning capacity, of any man for a period of years is greater when working eight hours a day than when he labors for ten hours out of the twenty-four. The eight-hour man is 100% efficient for each hour that he works, while the ten-hour man works more slowly and will average probably 80% in efficiency.

A saw mill operator is authority for the statement that the lumber output of his mill working from sun up 'till sun down with the same operatives, was greater in the Winter with short hours than in the Summer with the long hours. It was not the heat that caused the difference, because General Gorgas and General Goethals have proved in Panama that the white man can live and be as efficient in the tropics as in colder climates. It is simply the principle that "self-preservation is the first law of Nature;" that men unconsciously slow down in their work when they have long hours because they instinctively realize the physical disaster that will surely come from too long continued intense physical or mental effort. A mechanic who had a physical breakdown from a twelve-hour day position recently told the writer that for years he and others would get so tired during the afternoon that the last few hours of their work amounted to but little. Many observers have reported similar results; so that from the viewpoint of efficiency and for increasing the earning capacity of laborers the eight-hour day is best for those who employ labor.

The eight-hour working day, if universally carried into effect, would surely decrease the morbidity and mortality from the germ diseases such as la grippe, pneumonia, typhoid fever and tuberculosis. The human body, when in normal condition, is but slightly susceptible to the germ diseases. But when in a state of lowered resistance from fatigue, inanition, or from any other cause of physical depression, the pathogenic germs overcome the natural or inherent immunity to bacterial diseases. Every physician who has had much hospital experience knows that it is the overworked laborer, who toils long

[1]The Harvey Lectures, Philadelphia, 1906.

hours and leads a life of exposure, that most frequently comes down with the infectious or communicable diseases of adult life.

President Wilson, in urging the eight-hour day, has advocated a measure that will, in the course of years, add to the average length of human life. We know that as a result of fatigue there accumulates in the muscles a toxic substance (kenotoxin) which in small amounts, if injected into animals, will produce definite symptoms of fatigue, and in larger amounts will cause death.[2] We also know that these fatigue substances, by circulating in the blood, affect other organs.[3] It is therefore surely reasonable to assume that the toxin of fatigue (kenotoxin) circulating in the blood would eventually cause degeneration of the delicate endothelium lining the arteries, and that as a result of continued daily fatigue arteriosclerosis, chronic cardiac and renal diseases would result. The degenerative diseases, viz: insanity, heart, kidney and arterial diseases, are increasing; and chronic fatigue, from long hours of work, is without doubt one of the causes of the actual decrease in average age of the person who lives 'till adult life. The increase in the average length of life has been due to the very great reduction in the mortality of the diseases of childhood and from the decrease in typhoid fever, tuberculosis and other communicable diseases; but the average length of life of those who become wage earners has decreased. The American people have learned how to work. When they learn how to play the years of their span of life will be increased.

If President Wilson and Congress could limit the working hours of professional and business men to eight hours in the twenty-four, lawyers, ministers, doctors and railroad presidents would live longer and be more efficient. The long hours and the loss of sleep incident to the practice of medicine are the principal causes for the relatively large proportion of drug habitues among physicians, and no doubt partly account for the fact that the longevity of doctors is less than that of men in any other profession or trade except those classed as hazardous occupations. Unfortunately professional and business men can not form unions and demand an eight-hour working day, but each individual must regulate his own hours for work and rest. If he desires to be efficient over a long period of years and enjoy life to the utmost, he will as nearly as possible adopt the eight-hour working day.

[2]Weichardt: Archiv. Anat. u. Physiol., 1905, p. 219.
[3]Howell: Text-Book of Physiology, W. B. Saunders Company, 1915, p. 71.

THE MORTALITY OF OUR PUBLIC MEN

A pamphlet with the above title has been received from the American Statistical Association. It deals primarily with a study of the mortality of the Senators and Representatives of the United States. The method employed has not been that of expected longevity, but that of expected mortality, using the mortality of the American Experience table as a standard of comparison. The chief data were obtained from the Biological Congressional Directory, and the necessary facts relating to nearly 7,500 Congressmen were entered upon individual cards. The observations were closed March 3, 1912.

The statistics show that during the first and second year of service the deaths of Congressmen amount to only 59% of the expected mortality.

From the third to the tenth year the deaths are 99% of the expected mortality; from the eleventh to the twentieth year, 107%; from the twenty-first to the thirtieth year, 101%, but after thirty-one or

more years of service the deaths amounted to only 74% of the expectation.

Something like the following explanation is offered by the pamphlet: Congressmen are a select group having unusual vitality, and therefore a low mortality rate at the outset. Congressional life, viewed from every standpoint, imposes unhygienic conditions, and makes a severe drain on this vitality, resulting in gradually increasing mortality. Some Congressmen contrive to avoid or to correct these unhygienic conditions, and survive their less careful colleagues. Age has something to do with their mortality rate; those under fifty years of age who have served over six years show a rate of 103%; those sixty years of age and over, 124%.

There is also a difference in the mortality of Congressmen from different parts of the country, the Southern States showing a small percentage over that of the Eastern States, while the Western States have the most favorable record. It is pleasant to know that the mortality of our modern Congressmen is in general lower than that of their predecessors, the improvement being the greatest for the younger ages.

A consideration of all the conditions prevailing leads to the conclusion that bad hygiene has been more destructive than the weight of responsibility. It is the wear and tear diseases (or degenerative diseases) which kill their victims chiefly in their later years; the infectious diseases which kill their victims chiefly at the earlier ages are now controlled or avoided to such an extent that fewer of those susceptible succumb to them. Modern convivial social life in general is more fatal to men subjected to its temptations than are all of the pathogenic organisms known to science. Better health ideals, customs and habits will do more to favor the longevity of those who observe them, be they Congressmen or private citizens, than will all the fads, from raw foods to Fletcherism, that now assail a bewildered public.

SCHOOL OF HYGIENE AND PUBLIC HEALTH AT JOHNS HOPKINS

A few years ago, Harvard University took the lead in establishing a post-graduate course in medicine offering the degree of Doctor of Public Health. The need of such an institution for the scientific training of public health workers was clearly shown by the enrollment in that department, as well as by the great demand for its graduates.

No branch of the profession is capable of higher development and specialization. The day has passed when public health matters are to be entrusted to the busy practitioner who may wish to augment his income, but who is oftentimes unfit for the work both from want of time as well as from lack of special training.

Recently, the Rockefeller Foundation has granted the necessary funds for establishing and maintaining a School of Hygiene and Public Health* in connection with the Johns Hopkins University, Baltimore. The South has long felt the need of such an institution and rejoices in the fact that at last it is to have what will doubtless prove to be the most complete school of its kind in the world.

Dr. William H. Welch, Professor of Pathology in the Johns Hopkins University, has been made the Director of the School of Hygiene and Public Health, while Professor William H. Howell has been appointed head of the Department of Physiology. The rest of the staff members, which will include engineers and sanitarians as well as physicians, have not yet been selected.

*The Johns Hopkins Alumni Magazine, IV, 4, June, 1916, pp. 289-293.

It will be an independent unit of the University though working in coöperation with the Medical School and with the School of Engineering. A separate building and all necessary laboratories will be provided. This new department is expected to open its doors to students in October, 1917.

SURGEON VON EZDORF DIED ON THE FIRING LINE

The names of soldiers and sailors who have died for their country are written in history, poetry and story. Yet where do we read of the trials and hardships and of the glorious records made by physicians who, through their skill, learning and untiring devotion to duty, have saved the lives of thousands of their countrymen? Surgeon R. H. von Ezdorf, of the United States Public Health Service, was one of the peace heroes who, in his work on the epidemiology of malaria, rendered a service to his country that should not be forgotten. When he died suddenly on September 8 in Lincolnton, North Carolina, while in the performance of his duty, he left a record of achievement second to few sanitarians in his time.

Probably no man has a more accurate or more thorough knowledge of the epidemiology of malaria than had been acquired by Dr. von Ezdorf, and surely no one was so well informed regarding its distribution or of the methods for its eradication in the South. He made a number of notable contributions to the literature on malaria, but he did not claim to have made many startling discoveries. His work consisted in making the practical application of the discoveries of Laveran, Ross, Manson, Carter, LaPrince, Bass and others who have blazed the trail that will finally lead to the eradication of the greatest enemy to the agricultural and industrial development of the South. As the surgeon in charge of the epidemiological work on malaria for the United States Public Health Service, von Ezdorf was attempting, with a very meager appropriation, to do for the Nation what Gorgas did for Havana and the Canal Zone.

Dr. von Ezdorf's one mistake was that he did not realize that there is a limit to physical endurance. He thought malaria, talked it, and dreamed of the time when this unnecessary disease would be banished from American soil. His friends knew of the long hours he worked and of the strenuous life he led; but no one, and he probably least of all, realized that his great heart would cease to beat so soon. He accomplished more in the twenty years of his professional work than most men do in a life time. It is most unfortunate that he could not have restrained his desire for work and have lived longer to carry on the great task that he had begun.

It is a great misfortune for the South to lose a man of such marked attainments, and whose life was given over entirely to so important an undertaking. The distinguished service for his country rendered by Dr. von Ezdorf has become history, but the work which he began will be carried on until malaria is one of the rare or forgotten diseases in the United States. Unborn generations will therefore receive the blessings of the intense and well directed efforts of this unostentatious man who died from overwork that the lives of others might be saved.

AN ORGANIZATION FOR FEE-SPLITTERS AND DISGRUNTLED DOCTORS

One Emory Lanphear, who has a national reputation as a fee-splitter, has sent out a call to arms for all the disgruntled and disconsolate doctors, who can not

find comfort in regular organized medicine, to meet in St. Louis on October 3, 4 and 5 to devise ways and means for staying the terrible medical octopus, otherwise known as the American Medical Association.

"Membership in a local society is not essential" to become a member of the proposed "Medical Society of the United States," otherwise a number of fee-splitters, who are named as among the organizers, and who have been expelled from their city or county societies, would be ineligible to membership.

It might be best not to dignify the proposed organization with editorial mention, but the program contains the names of a few prominent physicians who are surely not familiar with the reputation of some of its organizers, and whom we believe should be informed on the subject. Lanphear, who seems to be the moving spirit in "the revolt against the A. M. A.," will be remembered as the open champion of fee-splitting. In a series of articles published in the *American Journal of Clinical Medicine*, he defended the division of fees as being right and just. Lanphear sent out a circular letter, appropriately signed in blood red ink, in which he offered to give the family physicians 40% of the fees received by him for surgical services. We are informed that some of the other organizers have the same low professional standards.

It is unnecessary to say that there is no place in medicine for an organization founded on spite and prejudice. The American Medical Association with its great *Journal*, with its Councils on Medical Education, Chemistry and Pharmacy, and Health and Public Instruction, has made a wonderful record in raising the standards of the medical profession. There is every reason to believe that its future will be no less resplendent than has been its past, and that no other national medical organization can ever, or will ever, meet with even a modicum of the success of its competitor.

NEW BOOKS BY MEMBERS SOUTHERN MEDICAL ASSOCIATION

PARADOXICAL PAIN—HARBIN*

The purpose of the book is to show that experiences, painful as they may seem at the time, often later prove a blessing in disguise; and that in the attainment of success, pain plays a much greater role than pleasure. "The capacity to enjoy implies a susceptibility to suffer."

Orthodox to a degree, there is a hopeful philosophy permeating the whole.

The book may be read with great pleasure and profit by the laity as well as by the profession, for there is included a wealth of general information narrated in a pleasing style.

*By Robert Maxwell Harbin, A.B., M.D., F.A.C.S., Rome, Ga. 212 pages. Boston: Sherman, French and Co., 1916.

A CORRECTION

Our attention has been directed by Major Robt. E. Noble, United States Army, Washington, D. C., to an oversight on our part when in an editorial in last month's issue of THE JOURNAL we stated that Walter Reed had been a member of the United States Public Health Service. Of course such was not the case. Dr. Reed, as well as Drs. Lazear, Carroll and Agramonte were all officers of the United States Army.

ATLANTA, THE CONVENTION CITY

FACTS ABOUT ATLANTA AND GEORGIA*

Atlanta has a population of 205,000, estimated according to per cent. of increase from 1900 to 1910. The city and suburbs have a total of 225,000.

Atlanta is the second largest mule market.

Atlanta is the fourth largest insurance center.

Atlanta has the fourth largest Western Union office.

Atlanta's postal receipts for year ending April 30, 1916, were $1,441,574.54.

Atlanta's postoffice, last fiscal year, sent out 65,000,000 letters, approximately 3,000,000 packages.

Atlanta has one hundred and one hotels and restaurants.

Atlanta ranks 32d in population and 21st in bank clearings.

Atlanta has 69 public schools, with an enrollment of 26,162.

Atlanta has in the Ivy Exchange the largest telephone exchange in the South.

Atlanta's birth rate in 1915 showed an increase; death rate showed a decrease.

Atlanta has 264 churches, representing nineteen denominations and five independents.

Atlanta's railroads radiate in fourteen directions, operating 149 daily passenger trains.

The printers' and publishers' pay-roll in Atlanta is greater than that of any other line of industry.

Atlanta's post office receipts are greater per capita of population than any other city in the Union.

Atlanta was the first city in the South to contribute to a public library from municipal funds.

Atlanta has 200 miles of modern electric street railway and 35.5 miles of interurban system.

Atlanta is the center of industry — railroads, finance, education, automobiles, publications and commerce—for the Southeast.

Atlanta factories manufacture one thousand articles. The finished products in 1915 were valued at $41,000,000.00. Sixteen thousand people employed in these factories received, during 1915, $9,500,000.00 in salaries and wages.

Atlanta has 39 office buildings, which have a total of 97 elevators, carrying an average of 179,380 people, and traveling 1,357 miles per day. Atlanta has more fire-proof office buildings, according to population, than any other city in the world.

Atlanta is the metropolis of the Southeast.

Atlanta is The Convention City of Dixie. Records for 1915 show 140 conventions and special events, attended by 42,527 delegates and visitors, who spent in the city $765,486.00.

Atlanta leads all Southern cities in National bank capital, surplus, and individual deposits.

In 1915, total individual deposits in National banks amounted to $26,908,499.00, which was $3,858,664 more than any other city in the South.

Capital, surplus and undivided profits of National banks during the same period totaled $9,998,502.00, or $1,213,263.00 more than any other Southern city.

Atlanta uses more than 18,000,000 gallons of water daily from the city reservoirs. The city has an abundant supply of freestone water, flowing down from the Blue Ridge Mountains. Rate for domestic use, 60 cents a month.

In the State of Georgia, approximately $8,000.00 every day in the year is spent for highway improvement.

Georgia is the largest State east of the Mississippi River, and has a population of approximately 2,884,069.

Georgia has 678 State and 114 National banks, with a combined capital and surplus of $70,759,645.00.

Georgia's 1915 peach crop sold for $5,330,000.00, the value exceeding that of any other state by $1,587,000.00.

The per cent. of illiterate whites between ten and twenty years of age in Georgia is less than in any other state south of the Mason-Dixon line.

Georgia's farm products in 1915 were valued at $250,000,000.00.

*Supplied by the Atlanta Convention Bureau.

CORRESPONDENCE

CAFFEINE BEVERAGES

Editor Southern Medical Journal,
Birmingham, Ala.

Please mail me a copy of August issue of The Journal of the Southern Medical Association, in which was your editorial on the drinks containing caffeine.

It has been with pleasure that I have read your articles in behalf of public health and public welfare. As you state, the medical profession should enlighten the laity concerning the diseases that cause so many women soon after marriage to be introduced to the surgeon for his services. Well do you state that it is "high time" that the altruistic profession should teach the people the causes of premature senility, of arterial degeneration, and of the diseases and habits of environment that destroy homes, that wreck men, women and children. This instruction, as you affirm again and again, should not be partial but all-embracing.

War is being waged against alcohol, morphine and kindred drugs. Then why pass by coffee, tea, the cola drinks, and tobacco in all of its forms?

You have sounded a warning when you tell of

the seriousness of the widespread habit of drinking solutions containing the drug caffeine. Whiskey is taken as a rule by men, but cola drinks are taken by men, women and children,—by children as young as five or six years of age. The average number of "dopes" consumed every day by a cola fiend is eight or ten. A boy frequently boasts that he has just taken four to six without leaving the drink stand. One boy told me last night that he has drunk as many as twelve bottles of "dope" at one time. Such persons, those addicted to the use of the drug caffeine, often suffer from hyperacid stomachs, general pruritus, nervousness and polyuria,—many of these symptoms being due to the high blood pressure caused by ingestion of caffeine.

We know the relation that exists between high blood pressure and arteriosclerosis, and the danger of apoplexy among those who have arteriosclerosis when the blood pressure is high.

However, we should not be one-sided, but take the larger view that looks on all sides. We can not as yet state what causes many of the neuroses and psychoses. The cola drinks are of recent introduction, though caffeine in other ways has long been in common use.

If we study family lines not from the vain and victory-loving standpoint usually taken, but from a biological standpoint, we find among all families, long before the ancestors left their Virginia and Carolina homes, that epilepsy, hysteria, neurasthenia, dipsomania and all forms of monomania were common, that these have increased because the population has increased, and that we find out about these cases now because we have a better scientific grasp of the situation. Few families are exempt; so none need boast. We see the increase of these nervous and mental maladies in such a proportion as to make us at times suspect that they are subject to Mendel's law. Many hypotheses as to the causes of the psychoses and neuroses have been brought forward. Some causes have been found out.

Freud, with his suppression theory, has come forward. Some claim the neuroses and psychoses are parasyphilitic symptoms. Others indict alcohol because it strikes at the germ plasma. Still others believe the trouble to be caused by disturbances of the internal secretions or some form of toxemia. Morton Prince and others believe vicious training in early life to be a large factor.

Admitting that there is some truth in all the theories, there are still depths in the human mind that have never yet been sounded,—strange seas that seamen never yet have sailed. Neither do we know from what port blow the strange winds that wreck and rend. Our ignorance should at least make us modest in our statements. We know this, however, that caffeine and alcohol and other drugs can do no good except when given under the direction of a physician, and that their habitual use aggravates to a serious degree the widespread neuroses and psychoses.

Very truly yours,

W. B. PALMER.

Furman, Ala., Sept. 4, 1916.

BOOK REVIEWS

The Aftermath of Battle

With the Red Cross in France. By Edward D. Toland. 175 pages. New York: The Macmillan Co., 1916.

Roadside Glimpses of the Great War

By Arthur Sweetser. 272 pages. Illustrated. New York: The Macmillan Co., 1916.

These books are both by young Americans: both deal with the European War. There the analogy ceases. It would be hard to imagine a greater divergence in treatment.

Mr. Toland left a Philadelphia banking business dulled into inactivity by the outbreak of war, and in a somewhat holiday mood, we gather, took passage in the steerage to see what all the fuss was about. He was not long in learning the reality of the conflict, soon becoming attached to a Paris hospital, where he made himself useful in more than one capacity. He is no sentimentalist: he tells a dreary tale of suffering with scarcely a word of comment; one operation succeeding another in rapid succession. His language is bare of adjective and of descriptive phrasing, just a grim recital of pain. What can be the end of it all, we wonder, when on the last page we reach the author's own conclusion, that an economic upheaval of some sort, rather than actual fighting, will bring peace.

On the whole, the book seems scarcely to merit the warm praise bestowed upon it in Mr. Owen Wister's glowing preface.

Mr. Sweetser, on the other hand, presents the born observer and trained writer. A newspaper man from Boston, he rushed across at the first cry of war, and immediately found himself in the thick of it. In twelve thrilling chapters, replete with anecdote, he recounts his truly remarkable adventures.

On a bicycle he followed in the wake of von Kluck on the famous Paris drive; three times did he taste the lot of the military prisoner, and many times did he miraculously escape it. Once he was forced to walk eleven miles ignominiously manacled to a German prisoner, between lines of jeering, hooting, hating Frenchmen.

There is humor here, and pathos, and horror; all the glory and the heroism and the terror of war, vibrant, pulsating, real.

Where Mr. Toland writes with great restraint, Mr. Sweetser gives his pen free rein. France in despair and France in hope live on his pages, and we weep anew for the agony of Belgium. It is with both regret and relief that we close the covers upon this maelstrom and turn blurred eyes on our own work-a-day world.

Nitro by Hypo.

A Pep-tonized Tonic for the Physician. By Edwin P. Haworth, Superintendent Willows Maternity Sanitorium, Kansas City, Mo. 128 pages. Kansas City: The Willows Magazine Co., 1915.

The author presents a collection of short, snappy essays on topics of interest to the physician both as regards his profession and his daily life. It is a highly readable little book, for whose perusal it will well pay any man to devote a half-hour's time.

BOOKS RECEIVED.

The Principles and Practice of Perimetry.—By Luther C. Peter, A.M., M.D., F.A.C.S., Associate Professor of Ophthalmology, Philadelphia Polyclinic and College for Graduates in Medicine; Ophthalmologist, Rush Hospital for Consumption and Allied Diseases. 232 pages. 119 engravings. Philadelphia and New York: Lea and Febiger, 1916.

Diseases of the Eye—A Handbook of Ophthalmic Practice for Students and Practitioners. By George E. de Schweinitz, M.D., Ll.D. (Univ. of Pa.), Professor of Ophthalmology, University of Pennsylvania; Ophthalmic Surgeon, University Hospital; Consulting Ophthalmic Surgeon, Philadelphia Polyclinic Hospital, the Philadelphia General Hospital, and the Orthopedic Hospital and Infirmary for Nervous Diseases. Eighth Edition, 754 pages, reset with 386 illustrations and 7 colored plates. Philadelphia and London: W. B. Saunders Co., 1916.

Practical Massage and Corrective Exercises.—By Hartvig Nissen, President of Posse Normal School of Gymnastics; Supt. of Hospital Clinics in Massage and Medical Gymnastics; Lecturer, Harvard Summer School; Former Instructor of Physical Training at Johns Hopkins University, etc. Revised and Enlarged Edition. 211 pages with 68 illustrations. Philadelphia: F. A. Davis Co., 1916. Cloth, $1.50.

The Treatment of Diabetes Mellitus—With Observations Upon the Disease Based Upon One Thousand Cases. By Elliott P. Joslin, M.D., Assistant Professor of Medicine, Harvard Medical School; Consulting Physician, Boston City Hospital; Collaborator to the Nutrition Laboratory of the Carnegie Institution of Washington, in Boston. 440 pages. Ilustrated. Philadelphia and New York: Lea & Febiger, 1916.

Obstetrics Normal and Operative—By George Peaslee Shears, B.S., M.D., Professor of Obstetrics and Attending Obstetrician, New York Polyclinic Medical School and Hospital; Former Instructor in Obstetrics, Cornell University Medical College; Attending Obstetrician, New York City Hospital; Senior Attending Obstetrician, Misericordia Hospital. 745 pages. 419 illustrations. Philadelphia and London: J. B. Lippincott Co., 1916. Cloth, $6.00.

Sexual Impotence—By Victor G. Vecki, M.D., Consulting Genito-Urinary Surgeon, Mount Zion Hospital, San Francisco, Cal. Fifth Edition, Enlarged. 405 pages. Philadelphia and London: W. B. Saunders Co., 1915.

The Clinics of John B. Murphy, M.D.—At Mercy Hospital, Chicago. Edited by P. G. Skillern, Jr., M.D., of Philadelphia. Volume V, No. 3, June, 1916, and Volume V, No. 4, August, 1916. Philadelphia and London: W. B. Saunders Co. Bi-Monthly. Per year, $8.00.

Physics and Chemistry for Nurses—By Amy Elizabeth Pope, Graduate of School of Nursing, Presbyterian Hospital, New York City; Special Diploma in Education from Teachers College, Columbia University; Formerly Instructor in School of Nursing, Presbyterian Hospital; Instructor in School of Nursing, St. Luke's Hospital, San Francisco, Cal. 441 pages. Illustrated. New York and London: G. P. Putnam's Sons, 1916. Cloth, $1.75.

The Expectant Mother and Her Child—Containing the Essential Things That Every Mother and Woman Should Know. By Margaret J. Modeland, R.N., Former Head Nurse, Gynecological Department, and Supervisor of Maternity Department, Allegheny General Hospital. Introduced by Harold A. Miller. M.D., Obstetrician to Allegheny General Hospital, etc. Philadelphia: John C. Winston Co., 1915. Flexible leather.

Studies in Immunitization Against Tuberculosis—By Karl Von Ruck, M.D., and Silvio Von Ruck, M.D. 439 pages. New York: Paul B. Hoeber, 1916. Cloth, $4.00.

Bacteriology—General, Pathological and Intestinal. By Arthur Isaac Kendall, B.S., Ph.D., Dr. P.H., Professor of Bacteriology, Northwestern University Medical School, Chicago, Ill. 651 pages. Illustrated with 98 engravings and 9 plates. Philadelphia and New York: Lea and Febiger, 1916.

Ophthalmoscopic Diagnosis—For General Practitioners and Students. By George W. Jean, A.B., M.D., Instructor in Ophthalmoscopy and External Diseases of the Eye, School of Ophthalmology, New York Eye and Ear Infirmary; Assistant Surgeon, New York Eye and Ear Infirmary; Instructor of Ophthalmology, University and Bellevue Hospital Medical College, etc. 123 pages. 68 illustrations. New York and London: E. B. Meyrowitz, Inc., 1915.

Refraction of the Human Eye and Methods of Estimating the Refraction—Including a Section on the Fitting of Spectacles and Eye-Glasses, etc. By James Thorington, A.M., M.D., Emeritus Professor of Diseases of the Eye, Philadelphia Polyclinic and College for Graduates in Medicine; Member American Ophthalmological Society; Fellow of the College of Physicians of Philadelphia, etc. 407 pages. 344 illustrations; 27 in colors. Philadelphia: P. Blakiston's Son & Co., 1916. Cloth, $2.50.

A Text Book on Fractures and Dislocations—With special Reference to Their Pathology, Diagnosis, and Treatment. By Kellog Speed, S.B., M.D., F.A.C.S., Associate in Surgery, Northwestern University Medical School; Associate Surgeon, Mercy Hospital; Attending Surgeon, Cook County and Provident Hospitals, Chicago. 888 pages with 656 illustrations. Philadelphia and New York: Lea and Febiger, 1916. Cloth, $6.00.

Cerebellar Abscess—Its Etiology, Pathology, Diagnosis, and Treatment, Including Anatomy and Physiology of the Cerebellum. By Isidore Friesner, M.D., Adjunct Professor of Otology and Assistant Aural Surgeon, Manhattan Eye, Ear and Throat Hospital and Post Graduate Medical School, New York; and Alfred Braun, M.D., F.A.C.S., Assistant Aural Surgeon, Manhattan Eye, Ear and Throat Hospital; Adjunct Professor of Laryngology, New York Polyclinic; Adjunct Otologist, Mt. Sinai Hospital. 186 pages with 10 full page plates and 16 illustrations in the text. New York: Paul B. Hoeber, 1916. Cloth, $2.50.

Progressive Medicine—A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare, M.D., Professor of Therapeutics, Materia Medica and Diagnosis, Jefferson Medical College, Philadelphia; Assisted by Leighton F. Appleman, M.D., Instructor in Therapeutics, Jefferson Medical College, Philadelphia. Vol. XIX, No. 1, March 1, 1916; Vol. XIX, No. 2, June 1, 1916; Vol. XIX, No. 3, Sept. 1, 1916. Philadelphia and New York: Lea and Febiger. Per annum, $6.00.

Christianity and Sex Problems—By Hugh Northcote, M.A., Second Edition, Revised and Enlarged. 478 pages. Philadelphia: F. A. Davis Co., 1916. Cloth, $3.00.

Cancer—Its Study and Prevention. By Howard Canning Taylor, M.D., Gynecologist to the Roosevelt Hospital, New York; Professor of Clinical Gynecology, Columbia University; Member American Gynecological Society, etc. 331 pages. Philadelphia and New York: Lea and Febiger, 1915. Cloth, $2.50.

Venesection—A Brief Summary of the practical Value of Venesection in Disease. For Students and Practitioners of Medicine. By Walton Forest Dutton, M.D., Ex-President Carnegie Academy of Medicine; Penn. Society for Prevention of Social Diseases; American Academy of Political and Social Science, etc. 220 pages, illustrated with several text engravings and three full-page plates, one in colors. Philadelphia: F. A. Davis Co., 1916. Cloth, $2.50.

Medical and Surgical Reports of The Episcopal Hospital of Philadelphia—Vol. III. 352 pages. Illustrated. Philadelphia: Press of Wm. J. Dorman, 1915.

Skin Cancer—By Henery H. Hazen, A.B., M.D., Professor of Dermatology, Georgetown University; Professor of Dermatology, Howard University; Sometime Assistant in Dermatology, Johns Hopkins University; Member American Dermatological Association. 251 pages, with 97 text illustrations, and 1 colored frontispiece. St. Louis: C. V. Mosby Co., 1916.

A Text-Book of Practical Gynecology—For Practitioners and Students. By D. Tod Gilliam, M.D., Emeritus Professor of Gynecology, Ohio State University College of Medicine; and Sometime Professor of Gynecology, Starling Medical College; Gynecologist to St. Anthony and St. Francis Hospitals, etc.; and Earl M. Gilliam, M.D., Professor of Diseases of Women, Ohio State University, College of Medicine, Columbus, Ohio, etc. Fifth Revised Edition. 681 pages, with 352 engravings, a colored frontispiece, and 13 full-page half-tone plates. Philadelphia: F. A. Davis Co., 1916. Cloth, $5.00.

Autoplastic Bone Surgery—By Charles Davidson, M.D., Professor of Surgery and Clinical Surgery, University of Illinois, College of Medicine; Surgeon to Cook County Hospital and University Hospital; Fellow American College of Surgeons. 364 pages, with 174 illustrations. Philadelphia and New York: Lea and Febiger, 1916. Cloth, $3.50.

The Practical Medicine Series—Vol. V, 1915 Series. **Pediatrics. Orthopedic Surgery.** Edited by Isaac A. Abt, M.D., Professor of Pediatrics, Northwestern University Medical School; Attending Physician, Michael Reese Hospital; and John Ridlon, A.M., M.D., Professor of Orthopedic Surgery, Northwestern University Medical School. With the collaboration of Charles A. Parker, M.D. 225 pages. Illustrated. Cloth, $1.65. Entire series of ten volumes, $10.00.

Vol. VI, 1915 Series. **General Medicine.** Edited by Frank Billings, M.S., M.D., Head of Medical Department and Dean of Faculty of Rush Medical College, Chicago; and J. H. Salisbury, A.M., M.D., Professor of Medicine, Illinois Post-Graduate School. 359 pages. Illustrated. Cloth, $1.50. Entire series of ten volumes, $10.00.

Vol. VII, 1915 Series. **Obstetrics.** Edited by Joseph B. De Lee, A.M., M.D., Professor of Obstetrics, Northwestern University Medical School. With the collaboration of Hebert M. Stowe, M.D. 230 pages. Illustrated. Cloth, $1.35. Entire series of ten volumes, $10.00.

Vol. VIII, 1915 Series. **Skin and Venereal Diseases. Miscellaneous Topics.** Edited by Oliver S. Ormsby, M.D., Professor and Head of the Department of Skin and Venereal Diseases, Rush Medical College. With the collaboration of James Herbert Mitchell, M.D., Research Fellow in Pathology, Rush Medical College. Miscellaneous Topics edited by Harold N. Moyer, M.D. 240 pages. Illustrated. Cloth, $1.35. Entire series of ten volumes, $10.00.

Vol. X, 1915 Series. **Nervous and Mental Diseases.** Edited by Hugh T. Patrick, M.D., Professor of Neurology, Chicago Polyclinic; Clinical Professor of Nervous Diseases, Northwestern University Medical School; Ex-President Chicago Neurological Society; and Peter Bassoe, M.D., Assistant Professor of Nervous and Mental Diseases, Rush Medical College. 240 pages. Illustrated. Cloth, $1.35.

Vol. I, 1916 Series. **General Medicine.** Edited by Frank Billings, M.S., M.D., Head of Medical Department and Dean of the Faculty of Rush Medical College, Chicago. 384 pages. Illustrated. Cloth, $1.50.

Vol. II, 1916 Series. **General Surgery.** Edited by John B. Murphy, A.M., M.D., LI.D., F.R.C.S., England (Hon.) F.A.C.S., Professor of Surgery, Northwestern University; Attending Surgeon and Chief of Staff, Mercy Hospital and Columbus Hospital; Consulting Surgeon to Cook County Hospital and Alexian Brothers Hospital, Chicago. 620 pages. Ilustrated. Cloth, $2,00.

Vol. IV, 1916 Series. **Gynecology.** Edited by Emilius C. Dudley, A.M., M.D., Professor of Gynecology, Northwestern University Medical School; Gynecologist to St. Luke's and Wesley Hospitals, Chicago; and Hebert M. Stowe, M.D., Assistant Professor of Obstetrics, Northwestern University Medical School; Attending Gynecologist to Cook County Hospital. 232 pages, Illustrated. Cloth, $1.35.

Vol. V, 1916 Series. **Pediatrics. Orthopedic Surgery.** Edited by Isaac A. Abt., M.D., Professor of Pediatrics, Northwestern University Medical School; Attending Physician, Michael Reese Hospital; with the collaboration of A. Levinson, M.D.; and John Ridlon, A.M., M.D., Professor of Orthopedic Surgery, Northwestern University Medical School; with the collaboration of Charles A. Parker, M.D. Cloth, $1.35. Entire ten volumes, $10.00.
Chicago: The Year Book Publishing Co.

SOUTHERN MEDICAL NEWS

ALABAMA.

During the recent State Board examinations, held at Montgomery, forty-six applicants were given the right to practice medicine in the State.

At Birmingham, the Jefferson County Medical Society has appointed a committee, with Dr. B. L. Wyman as Chairman, whose duty it shall be to educate the people as to the needs of an adequate system of public health as recommended by Dr. Carroll Fox, of the U. S. Public Health Service. The Commissioners of the City of Birmingham have agreed to appropriate $45,000 annually to its Health Department.

At Gadsden, efforts are being made to create a joint county and city health department which shall employ the full time of three men and operate at a yearly expense of $5,000.

During a sanitary survey of Jefferson County, made by J. V. Donneley, Sanitary Engineer of the Alabama State Board of Health, it was found that some of the communities showed a very low rating. Leeds' score was 27 and Warrior's was 33.

At Birmingham, committees from the different womens' clubs, numbering more than 200, have just completed a sanitary survey of the city.

At Ashville, due to the efforts of County Health Officer Dr. D. E. Cason, appropriation has been made of sufficient moneys to carry on a complete sanitary survey of the city.

Dr. J. B. Stagg, of Pratt City, has been reported critically ill at his home in that city from a stroke of paralysis.

Deaths.

Dr. Oliver M. Steadman died at his home in Auburn on August 7.

ARKANSAS

Dr. T. B. Bradford, Field Secretary of the State Tuberculosis Association, has been engaged in or-

(Continued on Page 24)

That old fetid ulcer

that has thus far refused to heal, MAY heal up if you increase the coagulability of the patient's blood; some do, you know.

"Elixir Chloro-Calcium S & D"

in 3-fldrm. doses, well diluted, t. i. d., preferably an hour after meals, has worked wonders in some cases. It soon killed the odor and the healing started from the edges. It may do as well in the case you are now treating. Your druggist buys it only in pts. and 5-pts. Interesting clinical reports are yours for the asking.

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ganization work in the northern counties.

Dr. C. W. Garrison, State Health Officer, has been appointed on the Administration Committee by the National Committee on Malaria. The purpose of this committee is to bring about more organized effort in the fight against this disease.

Deaths.

Dr. Joseph Casdee was killed on August 1 when his automobile was struck by an Iron Mountain passenger train near Forrest City. He was a practicing physician of Cold.

Edwin M. Orr, aged 46, of Hot Springs, died on August 10.

DISTRICT OF COLUMBIA

At Washington, health officers from all over the United States were assembled in conference on August 17 to ascertain the best means for the prevention and treatment of infantile paralysis.

GEORGIA

At Atlanta, a very successful series of motion picture lectures has been completed by the Anti-Tuberculosis Association.

At Brunswick, after October 1, all meats sold in the city must first undergo rigid inspection.

A health and welfare organization has been formed in Floyd County and will employ a district nurse.

At Atlanta, the Emory University Medical Department has received a donation of $50,000 for the erection of an out-patient clinic. The donation was made by J. J. Gray, Jr., of Rockdale, Tenn., and the building to be erected will be called the J. J. Gray Clinic.

At Atlanta, the abolishing of the old-fashioned communion cups has been taken under consideration by the City Board of Health.

At Athens, the following officers were elected at the annual meeting of the Eighth District Medical Association: Dr. S. S. Smith, Athens, President; Dr. John Gerdine, Jorsey, Vice President; and Dr. E. M. Coleman, Athens, Secretary. The next meeting will be at Monroe.

Work has been commenced on Macon's new $80,000 City Hospital.

The annual mid-summer meeting of the First District Medical Society was held in Savannah on August 15.

On January 1, 1917, the LaGrange Sanatorium will be turned over to the City for use as a city hospital. The purchase was made possible by the following donations: Mr. J. E. Dunson, by will, $10,000; City, $10,000; Dr. and Mrs. Henry R. Slack, $10,000.

Dr. H. V. Humphries, of Albany, was married to Miss Pauline Gibson, of Tuskegee, Ala., on August 23.

Dr. Allen Bunce, of Atlanta, was married to Miss Lena River, of Worcester, Mass., August 29.

Deaths.

Dr. Thomas P. Reville, age 59, died at his home in Folkstown on June 20.

Dr. W. J. Rowe, for twenty-eight years a practitioner of Beauford, died on August 12.

Dr. Edgar J. Spratling, of Atlanta, died on August 25 after being shot by a woman at the State mobilization camp at Macon.

FLORIDA

It is reported that there has not been a single death among the one thousand and five hundred children of the Children's Home Society of Florida in the past two years.

The State Board of Health of Florida is seeking to educate the public by the means of a health train, which is permitted free travel over all the roads.

KENTUCKY

At Bowling Green, Dr. D. L. Addington was run over by an automobile, but escaped serious injury.

Dr. H. P. Sights, who has for the past seven years been Superintendent of the Western Kentucky Hospital for the Insane, was succeeded by Dr. Fred LaRue, of Smithson, on August 1. Dr. Sights is preparing to open a sanitorium at Dawson.

The Fayette County Medical Society held its annual outing on July 11.

At Pikeville College, in accordance with the request of the Pike County Medical Society, Surgeon John McMullen, U. S. P. H. S., held a trachoma clinic recently.

In the last report of Miss Mararet Colvin, visiting nurse for Muhlenburg County, there were 500 visits recorded and a total of 100 tuberculosis cases on hand.

At Henderson, suit has been filed against Dr. W. W. Wilson for $5,000 damages by Otto Hoffman. The plaintiff asserts that his business was injured by the statements of the doctor that illness in several families was due to the milk.

According to a recent report, though the deaths from smallpox and other preventable diseases have been reduced, tuberculosis is on the increase, there being 661 deaths during the two months embraced by same.

At Manchester, it has been reported that Dr. J. L. Anderson was very ill, but improving.

Dr. H. W. Fulkerson, of Louisa, has been reported very ill.

Deaths.

Dr. George F. Clark died at his home in Winchester on August 20 at the age of 47.

Dr. John B. Burch, of Mead County, died at the home of his sister in Louisville.

Dr. H. W. Coombs died at his home in Cave City on August 2 at 70 years of age.

Dr. G. W. Lindle died on July 30, after falling from a ladder.

Dr. M. G. Dunn was shot and killed on August 10 by Charles Wynn, a carriage worker.

LOUISIANA

Assistant Surgeon E. W. Scott has been assigned to quarantine duty at New Orleans.

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Hard Dry Feces

are not only difficult to pass, but may give rise to (1) irritation and congestion of the rectum, which may influence fissures and hemorrhoids (2) by their physical pressure, they may affect prostatic and other genito-urinary conditions. These are in addition to (3) the effects of any autotoxemia that may arise.

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(Continued from Page 24)

Two cases of yellow fever were found aboard a ship which arrived at New Orleans quarantine recently. No new cases have been reported.

At Shreveport, a new hospital will be built called the Highland Sanitarium with the following officers: Dr. T. P. Lloyd, President; Dr. H. J. Persons, Mansfield, Vice President; and Dr. J. A. Hendricks, Secretary-Treasurer.

Dr. Oscar Dowling, President of the Louisiana Board of Health, has been appointed by Surgeon-General Blue as a member of the Subcommittee on Education and Publicity of the National Committee on Malaria.

Dr. B. McKoin, of Mer Rouge, shot and killed Dr. Thom, of Gallion, on August 25. The quarrel is said to have arisen over patients.

Inspectors of the State Board of Health at Shreveport are making an anopheline survey of that city.

The Louisiana State Board of Health is sending small cartons of tubes containing nitrate of silver solution to all the registered midwives of the State with instructions as to its use in prevention of ophthalmia neonatorum.

Acting Assistant Surgeon G. McG. Stewart has been placed on duty at New Orleans in plague suppressive measures.

Dr. Lucian H. Landry was married in Columbia on September 13 to Miss Lowell Sedgwick.

Deaths.

Dr. R. H. von Ezdorf, who, as an officer of the United States Public Health Service, had been doing noteworthy work in malaria eradication in the South, died suddenly in Lewiston, N. C. He was at the time of his death in command of the Marine Hospital in New Orleans and had charge of the malaria work of the U. S. Public Health Service.

MARYLAND

A number of indictments were issued recently in Baltimore against doctors and midwives who have neglected to report births and deaths to the Department of Health.

Dr. B. M. Cromwell is reported very ill following a stroke of paralysis at the Eckhart mines, near Cumberland, Md.

Dr. William H. Welch recently went to England, where he will study methods which he hopes to incorporate in the Rockefeller School of Public Health to be founded at Baltimore.

Dr. Stewart V. Irvin, who has been inspecting prison camps in Germany, has returned to his home in Baltimore.

Dr. James J. Mills sailed recently for Biarritz, in France, where he will assist the local surgeons in the treatment of eye injuries.

Dr. Clement B. Clark has been elected to continue his work as Superintendent of the Springfield State Hospital for the Insane at Sykesville.

At Baltimore, by order of Health Commissioner Blake, of the Municipal Health Department, the opening of all public and private schools of the city will be delayed till September 25.

By order of the State Board of Health, after September 1 it is unlawful for the soft drink dispensors to use any glass for the second time.

All public playgrounds have been closed in Baltimore to prevent the spread of infantile paralysis.

By order of the Superintendent, no tickets are to be sold to persons in Washington, D. C., over lines passing through Baltimore on the Pennsylvania road.

Deaths.

Dr. William T. Cathell, aged 51, a throat specialist, died August 29.

Commander Edward Kershner, Hagerstown, Md., age 71, Medical Inspector U. S. Navy (retired), died suddenly of cerebral hemorrhage on August 20.

Dr. T. Hal Emery, age 43, of Monkton, Md., died of tuberculosis on August 15 at Saranac Lake, N. Y.

MISSISSIPPI

City Health Officer, Dr. J. T. Houston, of Meridian, is determined that the dairymen shall preserve a strict observance of the sanitary regulations of the City.

One of the sectional conferences to be held in different parts of the country under the auspices of the National Association for the Study and Prevention of Tuberculosis will convene at Jackson on October 30 and 31.

At Columbus, a strict sanitary campaign of the City has been started.

Dr. Joe Goldburger, of the United States Public Health Service, has recently been conducting pellagra investigations in Mississippi.

According to a recent collection of statistics, compiled by Dr. R. W. Hall, of the State Board of Health, there has been a gradual increase in the death rate in the State.

At Jackson, it was reported to the Hinds-Rankin Medical Society by a committee appointed to interview the commissioners on the subject, that the City Health Officer's salary will be increased from $50 to $100 next year.

The Northeast Mississippi Medical Association met at Boonville on September 12.

At Meridian, the resignation of Dr. G. F. Douglass, physician of the East Mississippi Insane Hospital, will take effect September 1.

Dr. J. D. Gillolylan has been reported to be seriously ill in Jackson.

Deaths.

Dr. J. A. Perry, of Shuqualak, died on August 17 from a stroke of apoplexy which occurred while he was in St. Louis for treatment.

Dr. M. J. Alexander died from self-inflicted wounds at his home in Tunica on August 20. He was 59 years of age and at one time President of the State Board of Health.

MISSOURI

On August 20 Surgeon M. J. White, U. S. P. H. S., was in Liberty and other places in Clay County to supervise the studies in rural sanitation. Quite an extensive health campaign has been in progress in this county.

(Continued on Page 28)

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This is soft, flavory wheat rolled into luscious flakes, hiding 25 per cent of unground bran. Can be cooked in 20 minutes. 15c per package.

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(Continued from Page 26)

Warrants are being issued against St. Joseph citizens who persist in maintaining outhouse vaults without the proper sewer connection.

At Kansas City, eight cases of diphtheria have been discovered recently among the forty inmates of the Thomas F. Spofford Home for Children.

At St. Joseph, medical inspection for the public schools is being urged for Buchanan County by Dr. George P. Young, U. S. P. H. S., who has been doing sanitary work in that vicinity.

At St. Louis, plans are being made to reopen the College of Physicians and Surgeons, which was merged about one year ago with the National University of Arts and Sciences.

Dr. B. K. Stumburg, of St. Charles, has been ordered to Honolula, Hawaiian Islands, for duty in the Medical Corps of the United States Army.

Dr. Harry J. Cummings is seriously ill with a cancer of the stomach in Atlantic City.

At St. Louis, recently, City Bacteriologist, Dr. F. A. Baldwin, reported a large amount of colon bacillus infection in the drinking water.

Deaths.

Dr. H. D. Baker, 65 years old, died at his home in Springfield on August 15.

Dr. John S. Wallace died while making a professional call on August 17. He was 67 years old and a citizen of Brunswick.

NORTH CAROLINA

The State Board of Health began its inspection of the hotels of the State on August 7.

In Wilson County, a study of intensive health work is being conducted under the joint direction of the International Health Commission and the North Carolina State Board of Health. Dr. E. B. Washburn, who has recently been on duty for the Commission in Trinidad, British West Indies, will be in charge of the work.

The anti-tuberculosis campaign being conducted in Franklin County by County Health Officer, Dr. James E. Malone, has just been brought to a close after three months' valuable service.

The State Board of Health pointed out, in a recent report, that while the people of the State were so exercised over the appearance of infantile paralysis, tuberculosis was really causing a great deal more suffering and death.

Deaths

Dr. Joseph P. Ewing, of Manchester, died in Fayetteville on July 21. He was formerly a resident of Dillon.

OKLAHOMA

At Chickasha, a sanitary survey was held recently and it is urged by State Superintendent R. H. Wilson that a similar survey of all cities where state schools are located be conducted. The Superintendent hopes to prevent a repetition of the epidemics which have molested the state schools every year of late.

At a recent meeting of the State Board of Medical Examiners in Oklahoma City, Dr. W. LeRoy Bonnell, of Chickasha, was elected President.

At Oklahoma City, a new $80,000 building is being added to the St. Anthony Hospital.

At Ardmore, gifts totaling $53,000 have been donated to the Hardy Hospital by Robert Watchorn, formerly Commissioner of Immigration, Ellis Island.

Dr. John I. Gaston, of Madill, was married to Miss Eula Mullins, Oklahoma City, August 14.

Dr. Paul Crawford was married to Miss Helen McKee on September 7. Both are from Oklahoma City.

Deaths

Dr. E. E. Flagg, 42 years old, of Mooreland, was instantly killed on August 17 when his automobile overturned some thirty-five miles north of that City.

SOUTH CAROLINA

At Greenville, during the recent sanitary survey of the county, it was found that the health conditions are very much improved. Especial attention is being given at present to the sanitation of the rural schols.

At Charleston, by the will of the late Mrs. Rosa Thompson, the medical society has at its disposal the bequest of $70,000 for improving or building an addition to the Riverside Infirmary. Ten thousand dollars left by the same donor to the St. Margaret's Home will be used for erecting a new home for incurables at Parkview.

At Greer, as a result of the sanitary survey recently conducted in that vicinity, an ordinance has been passed requiring that all owners of property shall, where possible, make sewerage connection within the next thirty days and further provides that where this is impossible a sanitary toilet shall be installed.

TENNESSEE

At Tazwell, the new Trachoma Hospital was dedicated and opened on August 18 with Dr. J. L. Goodwin, government expert, in charge.

At Knoxville, a resolution has been adopted whereby there is to be a strict enforcement of the edict that no child shall be admitted to the City schools unless satisfactory evidence can be shown of a successful vaccination.

Dr. B. G. Henning, of Memphis, is reported very ill in his home in that City.

Dr. R. Lin Cave has been very ill recently, but has been reported better.

Deaths

Dr. O. W. Beasley died at his home in Knoxville August 9.

Dr. Z. W. Neil died at his home in Verena on August 4 at 64 years of age.

Dr. Robert S. Porter died at his home in Henning on August 7 at the age of 78 years.

Dr. John B. Murrey, aged 67, died at his home in Nashville on August 16.

Dr. Charles R. Sharp died on August 4 in Nashville.

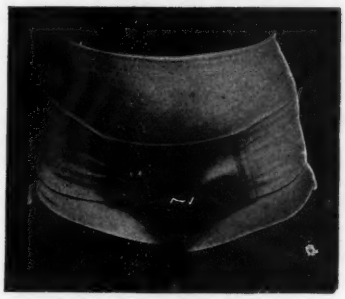
TEXAS

At El Paso, reports have been received that many are dying of typhus fever and smallpox in

(Continued on page 30)

THE STORM BINDER AND ABDOMINAL SUPPORTER

(PATENTED)



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Hay Fever

LOGICALLY TREATED

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SHERMAN'S BACTERINS

Pollen irritation favors the development of pyogenic bacteria in the respiratory tract which then become a primary factor of the disease. Experience shows that the immunizing influence of an appropriate bacterin will either cure the disease or so modify it that it causes but little distress.

WRITE FOR LITERATURE

G. H. SHERMAN, M. D.

DETROIT, MICHIGAN

Actually Shot from Guns

Puffed Wheat and Puffed Rice are actually shot from guns. This is done to explode every food cell. The result is easy, complete digestion. Every atom of the whole grain feeds.

This is the process, invented by Prof. A. P. Anderson, formerly of Columbia University.

The grains are sealed in guns. The guns are revolved for sixty minutes in a heat of 550 degrees.

This changes to steam the trifle of moisture which lies within each food cell. And a grain of wheat contains 125,000,000 of them.

When the guns are shot that steam explodes. Every food cell is thus blasted to pieces. The grains are puffed to bubbles, eight times normal size.

These are delicious whole-grain food, airy, flaky, toasted, crisp. But we talk them to you because they mean whole grains made wholly digestible. And that was never done before.

The Quaker Oats Company

Chicago (1415)

Puffed Wheat, 12c
Puffed Rice, 15c
Corn Puffs, Corn Hearts Puffed 15c

Except in Extreme West

(Continued from Page 28)

Zacatecas and other Mexican towns south of that City. It is feared that the plague will be spread by the fleeing refugees.

At Dallas, the physicians of the City entertained, August 26, in honor of Dr. Ernest V. Smith, of Rochester, Minn.

At Dallas, a typhoid epidemic appeared recently in the Buckner Orphans' Home.

At Dallas, plans are being made by the Baptist General Convention for enlarging the Baylor University College of Medicine.

Dr. J. R. Nichols recently suffered what might have proven a fatal accident, when, while taking a bath, the instantaneous heater blew up and he was rendered unconscious by the gas. After some hours the doctor was revived and has recovered from the accident.

Deaths

Dr. H. L. McLaurin, for thirty years a practicing physician of Dallas, died at his home on August 11 at 53 years of age.

Dr. H. D. Barnitz, 63 years old, died at his home in San Antonio on August 6.

Dr. C. W. Bowman, aged 70, died at his home near Cadde Mills on August 15.

Dr. A. J. Stewart, of Longview, died in San Angelo on August 25 at the age of 49 years.

Dr. Baxter Smith, of Bay City, formerly an Alabamian, died August 25 at the age of 70.

VIRGINIA

At the third annual convention of the Association of Surgeons of the Chesapeake and Ohio Railway, held at Old Point Comfort on August 18 and 19, the following officers were elected: Dr. C. R. Enslew, Huntington, W. Va., President; Drs. John C. Wyser, Clifton Forge, and A. B. Elliot, Capertown, Vice Presidents; C. A. Fish, Frankfort, Ky.; Secretary-Treasurer, Dr. L. G. Bentley, Richmond.

At Richmond, Dr. B. E. Summers has been succeeded by Dr. Henry S. Stern as Medical Inspector of the City Health Department.

Due to a refusal of the authorities of the Medical College of Virginia to set aside special rooms in the Virginia Hospital for the use of the Police, Fire and Street Cleaning Departments and Elementary Teachers' Association, the City Council is endeavoring to rescind the contract placing the college authorities in complete charge of the institution.

By a recent order of the State Board of Health, no schools will be allowed to open unless equipped with two sanitary toilets and either a sanitary drinking fountain or individual drinking cups.

By authority of State Health Commissioner Ennion G. Williams, children from states infected with infantile paralysis may pass through the State and stop for connections.

At Richmond, the fact that thirty warrants for violation of the county health laws have been recently sworn out indicates that County Health Officer, Dr. William Hafner, is forcing a strict compliance with the regulations.

At The Plains, Past Assistant Surgeon J. P. Leake has been investigating sporadic cases of infantile paralysis. The investigation extends over several other places in the vicinity of the District of Columbia.

Deaths

Dr. Cary N. Dunlap died at his home in Middlebrook on August 2 at the age of 46 years.

Dr. Samuel W. Hammond died in Norfolk in a local hospital on July 24 as the result of injuries received in a motor accident.

Dr. Ortho C. Wright died in Jarrett on July 8 as a result of injuries received when his automobile was struck by an Atlantic Coast Line freight.

Dr. Marvin D. Parham died on August 16 in Petersburg at a local hospital. He was a practitioner of Church Road.

WEST VIRGINIA

In less than ten days' time, over 5,000 people in the State received the prophylactic vaccination against typhoid fever.

The State Health Commission has undertaken an extensive health campaign in the State. As a preliminary step, large posters have been placed over the State warning the people against tuberculosis and suggesting measures for avoiding infection.

By an appropriation of the Ohio County Commissioners, it has been made possible for the Anti-Tuberculosis League to reopen the View Point Tuberculosis Sanitorium.

Deaths

Dr. E. Forest Harbert died of tuberculosis at his home in Shinnston on August 17.

PLACEBOES

Counting Chickens Before They Were Hatched

"Will you please give me a dime?"

"Have you no parents?"

"No, sir. I'm an orphan."

"Have you no brothers nor sisters?"

"Yes, sir. I have a brother in the Medical College."

"Then, if you have a brother in the Medical College, why on earth are you begging?"

"Oh, he's in a jar of alcohol. You see he was born with two heads."

Liar

"You know those forceps I bought here the other day? You said they'd last me two years."

"Well?"

"I've lost them."—Ex.

Needed Horse Sense

"Doc, I need your advice. Jones called me a donkey. What would you do?"

"Don't ask me, old man. I'm not a vet."

(Continued on Page 32)

Look for the RED HEART on the bottle label—no RED HEART, it's not Stafford.

STAFFORD WATER

The BO-GA-HA-MA (Water of Life) of the Indians

DIURETIC
DILUENT
APERIENT
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Dr. Henry Froehling, of Froehling & Robertson, Chemists, Richmond, Va., on October 30, 1914, collected in person water from Stafford Springs from which to make an exhaustive test. A complete report has just been made on the water—a report that justifies all the claims made of Stafford Water by its many friends.

Dr. Froehling in his report comments as follows:

"It has been shown that Radio Emmanations are very effective in Gout, Rheumatism, Sclerosis of the Arteries, and that the use of Radio Active water either by drinking or bathing, have a strong tendency to increase the activity of the kidneys and bladder. This has perhaps been no uncertain factor in producing the many cures of Nephritis and other kidney troubles credited to the Stafford Mineral Water.

Stafford shipped in any quantity—handled by all druggists.
We have excellent hotel accommodations at reasonable rates.

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VOSSBURG, MISS.

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No Effort No Loss of Time

Requires no Steam Valve for discharge. Simply press the Lever and the Automatic Sprayer will do the rest. Glass Tubes alone insure Absolute Purity.

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(Continued from page 30)

The Doctor

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A Microbe-stalking Pill-concocter!
At 3 A. M. they ring his Bell
Because some Fellow's dined too well.
He has to leave a Joyous Frolic
Because a Baby gets a Colic;
And while subduing Mortal Ills
With Jalap, Ipecac and Squills,
He has to hear the Conversations
Of Patients, matching Operations;
And then, to crown his Pain and Strife,
They vilify him here in "Life."
—Arthur Guiterman, in Life.

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Urines	3 00
All smears	2 00
Gonococcal fixation test	5 00
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Vaccines made of the exciting pathological organism, 25 ampules of graduated doses sent. Precipitin test for human blood in blood stains. Reports wired when money accompanies specimen, if requested.
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1. All claims or suits for alleged civil malpractice, error or mistake, for which our contract holder,
2. Or his estate is sued, whether the act or omission was his own,
3. Or that of any other person (not necessarily an assistant or agent),
4. All such claims arising in suits involving the collection of professional fees,
5. All claims arising in autopsies, inquests and in the prescribing and handling of drugs and medicines.
6. Defense through the court of last resort and until all legal remedies are exhausted
7. Without limit as to amount expended.
8. You have a voice in the selection of local counsel.
9. If we lose, we pay to amount specified, in addition to the unlimited defense.
10. The only contract containing all the above features and which is protection per se.

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